

REGULATIONS
ON
LEASING OF GEOTHERMAL RESOURCES
AND
DRILLING FOR GEOTHERMAL RESOURCES
IN HAWAII

PART I - LEASING OF GEOTHERMAL RESOURCES

RULE NO. 1
GENERAL

1.1 Purpose.

The purpose of these regulations is to provide for the leasing of State and reserved lands for the purpose of geothermal resources exploration, development and production and to provide for the regulation of all drilling for geothermal resources in Hawaii in order to prevent waste and damage to geothermal resources, to prevent damage to other natural resources, to prevent degradation of water resources, to protect the environment, and to prevent injury to life and property.

conserve and provide for optimum use of

1.2 Authority.

These rules are promulgated pursuant to the jurisdiction and authority of the Board of Land and Natural Resources provided in Chapters 182, 178, and 177 of the Hawaii Revised Statutes.

1.3 Incorporation by Reference.

Any document or part therein incorporated by reference herein is a part of these regulations as though set out in full.

1.4 Revision.

These regulations may be revised or repealed at any time by the Board in accordance with provisions of Chapters 91 and 182 of the Hawaii Revised Statutes. However, any revision to these regulations changing the rental or royalty due the State of Hawaii or changing the term of mining leases shall not adversely affect valid leases existing on the effective date of the revision.

1.5 Legal Conflicts.

Nothing in these regulations shall be construed as superseding Chapters 91, 182, 178, 177, 183-41, and 205 of the Hawaii Revised Statutes, as amended.

2.2 Application for Exploration Permits.

Any person may apply for an exploration permit by submitting a written application to the Board containing the following:

a. The name and address of the person, association, or corporation for whom the operations will be conducted and of the person who will be in charge of the actual exploration activities;

b. a description of the type of exploration activities proposed to be undertaken;

c. a description of the lands to be explored;

d. a map or maps, available from State or Federal sources, showing the lands to be entered or disturbed;

e. the approximate dates of the commencement and termination of exploration activities.

f. a surety company bond of not less than \$5,000 conditioned upon compliance with all terms and conditions of Rule 2 and the exploration permit.

2.3 Permit Filing Fee.

Each application shall be accompanied by a non-refundable filing fee in the amount of \$100.

2.4 Number of Permits.

There are no limitations as to the number of permits which may be applied for by any one person.

2.5 Approval of Permit Applications.

The Board shall either approve subject to terms and conditions it may at its discretion specify, or disapprove an application for a geothermal exploration permit within 60 calendar days after the date of receipt of the application.

2.6 Non-Exclusive Permits.

Geothermal exploration permits under Rule 2 allow only non-exclusive access to State lands for geothermal exploration purposes and do not provide any preference rights to a mining lease of the lands explored by such permits.

2.7 Duration of Permits.

Exploration permits shall be for a period of two years from date of issuance, but may be renewed for an additional period of time at the discretion of the Board.

In the event an exploration permit is issued on the same State lands, such permittee's rights shall be subordinate to the leaseholder's rights and the permittee's exploration activities shall not unreasonably interfere with or prevent the mining leaseholder's use of the leasehold. In the event an exploration permit area overlaps another permit area, the permit having the earlier approval date shall have precedence over the permit having the later date.

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1.6 Definitions.

For purposes of these regulations, unless otherwise indicated herein by express term or by context, the term:

"Board" means the Hawaii Board of Land and Natural Resources.

"Department" means the Hawaii Department of Land and Natural Resources.

"Chairman" means the Chairman of the Board of Land and Natural Resources.

"State lands" includes without limitation lands the surface rights to which are in the State of Hawaii and under the jurisdiction and control of the Board or under the jurisdiction and control of any other state body or agency, having been obtained from any source and by any means whatsoever.

"Reserved lands" means those lands owned or leased by any person in which the State or its predecessors in interest has reserved to itself expressly or by implication the minerals or right to mine minerals, or both.

"Occupier" means any person entitled to the possession of land under a certificate of occupation, a nine hundred and ninety-nine year homestead lease, a right of purchase lease, a cash freehold agreement, or under a deed, grant, or patent, and any person entitled to possession under a general lease, and also means and includes the assignee of any one of the above.

"Person" means a United States citizen of legal age, or any firm, association or corporation of such citizens which is qualified to do business in the State of Hawaii, and is not in default under the laws of the State of Hawaii, relative to qualifications to do business within this State, and governmental units.

"Geothermal resources" means the natural heat of the earth, the energy, in whatever form, below the surface of the earth present in, resulting from, or created by, or which may be extracted from such natural heat, and all minerals in solution or other products obtained from naturally heated fluids, brines, associated gases and steam, in whatever form, found below the surface of the earth, but excluding oil, hydrocarbon gas or other hydrocarbon substances.

"By-product" means (1) any mineral or minerals which are found in solution or developed in association with geothermal resources and which have a value not sufficient to warrant extraction and production by themselves, and (2) commercially demineralized water.

"Commercial quantities" means quantities sufficient to provide a return after all variable costs of production have been met.

"Mining lease" means a lease of the right to conduct geothermal operations on State lands or reserved lands to discover, develop, produce, and utilize geothermal resources therein. Unless the context indicates otherwise, "lease" or "geothermal lease" means "mining lease".

Part 1 { "Mining lessee" means the person as defined herein to whom a mining lease has been granted and its successor in interest or assignee. It also means any agent of the mining or an operator holding authority by or through the mining lessee. Unless the context indicates otherwise "Lessee" means "mining lessee".

geothermal "Operator" means the person as defined herein having control or management of mining operations on the leased lands or a portion thereof. The operator may be the lessee, designated operator, or agent of the lessee or holder of rights under an approved operating agreement.

micro 0781 "Unit agreement" means an agreement or plan of development and operation for the production and utilization of separately owned interests in the geothermal resources made subject thereto as a single consolidated unit without regard to separate ownerships and which provides for the allocation of costs and benefits on a basis defined in the agreement or plan.

Part 1 { "Force majeure" (copy from Chap. 182)
"Mining operations" (copy from Chap. 182)

RULE NO. 2 GEOHERMAL EXPLORATION PERMITS

2.1 Exploration Permit Required.

in under Part II of
An exploration permit is required to conduct any exploration activity which relates to the search on State Lands for evidence of geothermal resources and which may result in damage to State lands or resources thereon. Such exploration activity includes, but is not limited to, geophysical operations, drilling of shallow temperature test holes less than 500 feet in depth, construction of roads and trails, and cross-country transit by vehicle over State lands. Exploration activity requiring a permit does not include drilling for subsurface geologic information or for the discovery, evaluation, or production of geothermal resources; such drilling being regulated elsewhere in these rules and regulations. Exploration activity requiring a permit does not include the casual use of State lands for geothermal resources exploration. Casual use means activities that involve practices which do not ordinarily lead to any appreciable disturbance or damage to lands, resources and improvements. For example, activities which do not involve use of heavy equipment or which do not involve vehicle movement except over established roads and trails are considered casual use. Exploration activity requiring a permit under Rule 2 does not include exploration activity conducted pursuant to a geothermal mining lease, on State lands.

valid { Rule 2 is not applicable to exploration activities conducted pursuant to a mining lease. }

a report summarizing the results of the basic data obtained

for a period of one year

2.8 Confidentiality of Exploration Results.

Proy

Upon termination of the exploration permit, the results of the exploration shall be submitted to the Chairman for the Board and kept confidential. If the person holding the permit does not apply for a mining lease of the lands explored within a period of six months from the date the results are submitted to the Chairman, then the Board in its discretion need not keep the results confidential.

2.9 Departmental Investigation.

The Department may conduct scheduled and unscheduled inspections and investigations of operations conducted under geothermal exploration permits.

2.10 Suspension of Permits.

The Chairman may issue an order immediately suspending operations conducted under a geothermal exploration permit if the permittee is in violation of any terms or conditions of the permit which, in the judgment of the Chairman, jeopardizes the public health, safety, and welfare.

2.11 Cancellation of Permits.

The Board may cancel an exploration permit if it finds, after notice to the permittee and allowance for an opportunity for hearing, that permit requirements are not being observed, after notification to the permittee.

RULE NO. 3
GEOHERMAL MINING LEASES

3.1 Geothermal Mining Leases.

The Board may, in accordance with these regulations, lease the right to discover, develop and utilize geothermal resources in State and reserved lands. Prior to the public auctioning or granting without public auction of a mining lease, the Board shall set the term and conditions of the lease.

3.2 Geothermal Resources Available for Leasing.

Proy

All State and reserved lands, at the discretion of the Board, shall be considered available for geothermal mining leases.

3.3 Qualified Applicants

persons qualified to hold leases

from Rule 10 and 11 of

Any person as defined in these regulations shall be qualified to lease geothermal resources in State or reserved lands or take or hold an interest therein, unless the Board first determines after notice and hearing for good cause shown that a person is disqualified from leasing or taking or holding an interest in geothermal resources in State lands or reserved lands.

purpose of the surface act

3.4 Mining Leases by Public Auction.

Mining leases on State lands shall be granted only on a competitive bid basis at public auction as provided in Rule 4.

the vote of

3.5 Mining Leases Without Public Auction.

Prove { Mining leases on reserved lands may be granted on a competitive bid basis at public auction *or* without public auction to the occupier thereof or to his assignee of the rights to obtain a mining lease, if approved by two-thirds of its voting members as provided in Rule 5. *by the Board*

3.6 Size of Leaseable Tract.

A geothermal mining lease shall not embrace an area of more than 5,000 acres of contiguous land; except that as provided in Section 182-8, a mining lease shall not embrace an area of more than 2,560 acres of contiguous land if that area's longest dimension is six times greater than its narrowest dimension. A geothermal mining lease shall embrace an area of not less than 100 acres, unless the Board, at its discretion, deems otherwise.

3.7 Assignment of Mining Leases.

a. All applications for approval of assignments must be accompanied by a non-refundable fee of \$100.00 for each assignment.

b. Any mining lease may be assigned in whole or in part, subject to the approval of the Board, to an assignee who shall have the same qualifications as any bidder for a mining lease. The assignee shall be bound by the terms of the lease to the same extent as if the assignee were the original lessee. The approval of the assignment by the Board shall release the assignor from any liabilities or duties under the mining lease as to the portion thereof assigned except for any liability or duty which arose prior to the approval of the assignment by the Board and which remains unsatisfied or unperformed.

c. No assignment shall be effective until written approval is given. An assignment shall take effect the first day of the month following the approval of the assignment.

d. A lease may be assigned as to all or part of the acreage included therein to any person qualified to hold a State lease, provided that neither the assigned nor the retained part created by the assignment shall contain less than 100 acres. No undivided interest in a lease of less than 10% shall be created by assignment.

e. The assignor and his surety shall continue to be responsible for performance of any and all obligations under the lease until the approval of the assignment. After the approval of any assignment, the assignee and his surety shall be bound by the terms of the lease to the same extent as if the assignee were the original lessee, any conditions in the assignment to the contrary notwithstanding.

f. Where an assignment does not segregate the record title to the lease, the assignee, if the assignment so provides, may become a joint principal on the bond with the assignor. The application must also be accompanied by a consent of assignor's surety to remain bound under the bond of record, if the bond, by its terms, does not contain such consent. If a party to the assignment has previously furnished a statewide bond, no additional showing by such party is necessary as to the bond requirement.

g. Overriding royalty interests in geothermal leases constitute accountable acreage holdings under these regulations. If an overriding royalty interest is created which is not shown in the instrument of assignment or transfer, a statement must be filed with the Chairman describing the interest. Any such assignment will be deemed valid if accompanied by a statement over the assignee's signature that the assignee is a person as defined in these rules and that his interests in geothermal leases do not exceed the acreage limitations provided in these rules. All assignments of overriding royalty interests without a working interest and otherwise not contemplated by Rule 3.7 must be filed for record in the office of the Department in Honolulu within ninety (90) days from the date of execution. Such interests will not receive formal approval.

h. No overriding royalty on the production of geothermal resources created by an assignment contemplated by Rule 3.7 or otherwise shall exceed 5 percent nor shall an overriding royalty, when added to overriding royalties previously created, exceed 5 percent.

3.8 Revocation of Mining Leases.

A mining lease may be revoked by the Board if the lessee fails to pay rentals when due or if any of the terms of the lease or of these regulations are not complied with, or if the lessee wholly ceases all mining operations without the written consent of the Board for other than reasons of force majeure or the uneconomic operation of the mining lease for a period of one year. However, the Board shall give the lessee notice of any default and the lessee shall have six months from the date of the notice to remedy the default before revocation of the lease.

3.9 Surrender of Mining Leases.

Any lessee of a mining lease, who has complied fully with all the terms, covenants, and conditions of the existing lease, may, with the consent of the Board, surrender at any time and from time to time all or any part of the mining lease or the land contained therein upon payment as consideration therefor two years' rent prorated upon the portion of the lease or land surrendered and as otherwise specified in Section 182-15 of Chapter 182, HRS. A mining lease may also be surrendered if as a result of a final determination by a court of competent jurisdiction, the lessee is found to have acquired no rights in or to the minerals on reserved lands, nor the right to exploit the same, pursuant to the lease, and, in such event, the lessee shall be reimbursed for rentals paid to the State pursuant to the lease.

3.10 Number of Mining Leases; Leasehold Limitations.

There shall be no limit upon the number of geothermal mining leases that may be granted to any person undertaking any geothermal mining operation, [as specified in Section 182-8 of Chapter 182, Hawaii Revised Statutes.]

However, no person shall take, hold, own, or control at one time, whether acquired from the Board under these rules by lease or approved assignment of lease, or indirectly, a divided or undivided interest in geothermal resources in State and reserved lands in excess of 40,000 acres. In computing total holdings, ownership, or control, no person shall be charged with an interest through any association, firm or corporation unless he is the beneficial owner of 10 percent or more of the stock or other instruments of ownership or control of such association, firm, or corporation. Persons owning an overriding royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with an interest. The unitizing of acreage in one or more leases pursuant to a cooperative or unit plan of development or operation approved by the Board shall be excepted in determining an interest. Leased acreage actually producing geothermal resources and paying production royalties shall not be included in accountable interests.

3.11 Term of Mining Leases.

a. The term of all mining leases shall consist of a primary ten-year period and continuation periods which shall be as provided herein and determined prior to the bidding or granting of the lease by the Board, except that the sum of primary and all continuation periods of such leases shall not exceed 65 years from the effective date. The effective date of all leases shall be the first day of the month following the Board's approval of the lease bid or lease grant, as the case may be. All leases may be continued beyond the primary period as provided herein Rule 3.11, [without reopening or re-negotiating any terms or conditions of the lease.]

b. If during the primary period of a mining lease, geothermal resources are being produced or utilized in commercial quantities, that lease shall continue for so long thereafter as geothermal resources are produced or utilized in commercial quantities. Production or utilization of geothermal resources in commercial quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal resources for delivery to or utilization by a facility or facilities not yet installed, but scheduled for installation.

c. If, at the end of the primary term of a mining lease, geothermal resources are not being produced or demonstrably capable of being produced from the leased land, but the lessee is actively engaged in drilling operations below the depth of 1,000 feet or at a lesser depth of productive zone in a diligent manner, that lease may be continued, at the discretion of the Board, for a period of five years and for as long thereafter as geothermal resources are being produced or utilized in commercial quantities.

d. If the leased land is capable of producing geothermal resources in commercial quantities, but production is voluntarily shut-in, the lease shall continue in force upon payment of rentals for the duration of the primary period or five (5) years after shut-in, whichever is longer. If the Board determines that the lessee is proceeding diligently to acquire a contract to sell or to utilize the production or is progressing with installations needed for production, the lease shall continue in force for an additional five (5) years, upon payment of rentals, otherwise the lease may be terminated by the Board. The Chairman shall continue to review shut-in leases every

beginning five years after the date of production in commercial quantities under a lease. The Board may readjust the rate of royalty but may not increase such rate by more than 50 percent over the existing rate. In no event shall the rate of royalty payable exceed 20 percent.

five (5) years until production in commercial quantities occurs or the lease is terminated by the Board for lessee's lack of due diligence or surrendered by the lessee.

e. A lease that has been continued by reason of production or utilization of geothermal resources and which has been determined by the Chairman to be incapable of further commercial production and utilization, may be further continued for five (5) years if one or more valuable by-products are produced in commercial quantities. The Board may continue the lease for one or more additional five (5) year terms upon such terms and conditions as the Board deems fit to allow continued production of one or more valuable by-products in commercial quantities.

3.12 Rentals.

prod { *The of a mining lease*
a. Lessee shall pay to the State of Hawaii in advance each year the annual rental bid for each acre or fraction thereof under lease. The annual rental for the first year of the lease shall be due and payable and shall be received in the office of the Department in Honolulu within two days after the acceptance of the bid by the Board and the \$500 bid deposit shall be credited against such sum. Second year and subsequent rental payments must be received in the office of the Department in Honolulu on or before the anniversary date of the lease.

b. Annual rentals for each acre or fraction thereof under lease shall be at the price bid at public auction. The annual rental due each year shall be deducted from production royalties due and accrued during that same year, if there be any. The annual rental due a given year shall not be deducted from production royalties due in future years.

3.13 Royalties on Geothermal Production.

prod { a. The rate of the royalty to be paid to the State of Hawaii for the production of geothermal resources shall be determined by the Board prior to the bidding or granting of a mining lease, but the rate shall not be less than 10 percent nor more than 15 percent of the production value of the geothermal resources produced under the lease and sold or utilized by the lessee.

process { *proceeds received by the mining lessee for the sale of geothermal resources produced from the leased land*
b. The production value of geothermal resources produced *for a third party* for the purpose of computing royalties shall be determined by the gross sale price paid by a power plant or other legal purchasers for value. In the event that geothermal production hereunder is not sold but is furnished to a plant owned or controlled by the lessee, the gross sale price of such production for purposes of computing royalties shall be that which is reasonably equal to the price being paid to other geothermal producers for geothermal production of like quality and quantity. Should the Board believe that any charges imposed and deducted are excessive or that the price received by the lessee is unreasonable, the lessee shall upon thirty (30) days notice, provide the Board with evidence that the charges or price or both comply with the above requirements. *A reasonably equal gross proceeds.*

by the lessee { c. The rate of royalty to be paid to the State of Hawaii for production of any geothermal by-products shall be 10 percent of the amount or value of any such by-product produced under the lease and sold, exchanged or otherwise disposed of by the lessee, including commercially demineralized *contained in and extracted from the effluents produced*

water, except that no payment of a royalty will be required on such water if it is used in plant operation for cooling or generation of electric energy. No royalty shall be paid for associated by-products used or consumed by lessee in his production operations.

d. The lessee shall make payment of royalties to the Board in Honolulu within thirty days after the end of each calendar month and accompany such payment with a true and correct written statement by the lessee, showing the volumes of each geothermal resource sold, used, or otherwise disposed of, and lessee shall furnish such other data as may be necessary to enable the Board to audit and verify all royalties due and payable to the State of Hawaii.

e. Metering equipment shall be maintained and operated by lessee in such a manner as to meet acceptable standards of accuracy consistent with geothermal industry practices. Use of such equipment shall be discontinued at any time upon determination by the Chairman that standards of accuracy or quality are not being maintained and, if found defective, the Chairman will determine the quantity and quality of production from the best evidence available.

f. The lessee shall periodically furnish the Chairman the results of periodic tests showing the content of by-products in the produced geothermal resources. Such tests shall be taken as specified by the Chairman and by the method of testing approved by him, except that tests not consistent with industry practice shall be conducted at the expense of the State of Hawaii.

3.14 Commingling.

Lessee shall have the right, at its election prior to sale, to commingle geothermal resources produced from the leased land with that produced from other leases held by him or by other lessees, but lessee shall not do so without the Board's approval. However, before there shall be such a commingling of geothermal production the lessee shall determine the quantities and value of such production upon which royalties are due under the lease and agrees that in making such determinations, all measurements and samples shall be made and taken in accordance with good geothermal industry practices.

3.15 Unit or Cooperative Plans.

a. For the purpose of more properly conserving the natural resources of any geothermal pool, field or like area, lessees under leases issued by the Board are authorized, with the written consent of the Board, to commit the State lands to unit, cooperative or other plans of development or operation with other State lands, Federal lands, or privately-owned lands. Applications to unitize shall be filed with the Chairman who shall certify whether such plan is necessary or advisable in the public interest. He may require whatever documents or data he deems necessary. To implement such unitization, the Board may with the consent of its lessees modify and change any and all terms of leases issued by it which are committed to such unit, cooperative or other plans of development or operations.

b. The unit agreement shall describe the separate tracts comprising the unit, disclose the apportionment of the production or royalties and costs to the several parties, and the name of the operator, and shall contain adequate provisions for the protection of the interests of all parties, including the State of Hawaii. The unit agreement should be signed by or in behalf of all interested necessary parties before being submitted to the Chairman. It will be effective only after approval by the Chairman. The unit operator must be a person as defined by these rules and he must be approved by the Chairman.

c. The owners of any right, title or interest in the geothermal resources to be developed or operated under an agreement can be regarded as proper parties to a proposed agreement. All such owners must be invited to join as parties to the agreement. If any owner fails or refuses to join the agreement, the proponent of the agreement should declare this to the Chairman and should submit evidence of efforts made to obtain joinder of such owner and the reasons for nonjoinder.

d. In lieu of separate bonds required for each lease committed to a unit agreement, the unit operator may furnish and maintain a collective corporate surety bond or a personal bond conditioned upon faithful performance of the duties and obligations of the agreement and the terms of the leases subject thereto and these rules. Personal bonds shall be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bond and by a proper conveyance to the Board with full authority to sell such securities in case of default in the performance of the obligations assumed. The liability under the bond shall be for such amount as the Chairman shall determine to be adequate to protect the interests of the State of Hawaii. Additional bond coverage may be required whenever deemed necessary by the Chairman. In case of changes of unit operator, a new bond must be filed or a consent of surety to the change in principal under the existing bond must be furnished.

e. Any modification of an approved agreement will require approval of the Chairman under procedures similar to those cited in paragraph "a" of this rule.

f. The term of all leases included in any cooperative or unit plan of development or operation shall be continued automatically for the term of such unit or cooperative agreement, but in no event beyond that time provided in Rule 3.11. Rentals or royalties on leases so extended shall be at the rate specified in the lease.

g. Any lease which shall be eliminated from any such cooperative or unit plan of development or operation, or any lease which shall be in effect at the termination of any such cooperative or unit plan of development or operation, unless relinquished, shall continue in effect for the term of the lease or for one year after its elimination from the plan or agreement or the termination thereof, whichever is longer, and so long thereafter as lessee engages in diligent and continuous drilling as provided in Rule 7.8, or so long thereafter as geothermal resources are produced in paying quantities, but in no event beyond the time provided in Rule 3.11a.

h. Before issuance of a lease for lands within an approved unit agreement, the lease applicant or successful bidder will be required to file evidence that he has entered into an agreement with the unit operator for the development and operation of the lands in a lease if issued to him under and pursuant to the terms and provisions of the approved unit agreement, or a statement giving satisfactory reasons for the failure to enter into such agreement. If such statement is acceptable, he will be permitted to operate independently, but will be required to perform his operations in a manner which the Board deems to be consistent with the unit operations.

3.16 Bond Requirements.

Every lessee of a mining lease and every assignee thereof shall file with the Board, a bond, in a form and amount approved by the Board and made payable to the State of Hawaii, conditioned upon faithful performance of all requirements of Chapter 182, Hawaii Revised Statutes, of these regulations, and of the mining lease, and also conditioned upon full payment by the lessee of all damages suffered by the occupiers, in the case of reserved lands.

3.17 Liability Insurance.

Prior to entry upon the leased lands, lessee shall cause to be secured and to be thereafter maintained in force during the term of the lease, public liability and property damage insurance and products liability insurance in the amounts to be determined by the Board in the lease for damages to property and products damaged caused by any occupancy, use, operations or any other activity on leased lands carried on by lessee, its agents or contractors in connection therewith. Liability coverage for explosion, collapse and underground hazards are to be included prior to initiation of operations to drill a well for geothermal discovery, evaluation or production. Lessee shall evidence such additional coverage to the Chairman prior to initiation of drilling operations. If the land surface and improvements thereon covered by the lease have been sold or leased by the State of Hawaii, the owner or lessee of surface rights and improvements shall be a named insured. The State of Hawaii shall be a named insured in all instances. This policy or policies of liability insurance shall contain the following special endorsement:

"The State of Hawaii, the Hawaii State Board of Land and Natural Resources, the Chairman of the Board of Land and Natural Resources, the Department of Land and Natural Resources, and (herein insert name of owner or lessee of surface rights, if applicable) and the officers, employees and agents of each and every of the foregoing (hereinafter referred to as "additional insureds") are additional insureds under the terms of this policy, provided, however, the additional insureds shall not be insured hereunder for any primary negligence or misconduct on their part, but additional insureds shall be insured hereunder for secondary negligence or misconduct, which shall be limited to the failure to discover and cause to be corrected the negligence or misconduct of lessee, its agents or contractors. This insurance policy will not be cancelled without thirty (30) days prior written notice to the Board. None of the foregoing additional insureds is liable for the payment of premiums or assessments on this policy."

No cancellation provision in any insurance policy shall be in derogation of the continuous duty of lessee to furnish insurance during the term of this contract. Said policy or policies shall be underwritten to the satisfaction of the Chairman. A signed and complete certificate of insurance, with the endorsement required by this paragraph, shall be submitted to the Chairman prior to entry upon the leased land. At least thirty (30) days prior to the expiration of any such policy, a signed and complete certificate of insurance, with the endorsement required by this paragraph, showing that such insurance coverage has been renewed or extended, shall be filed with the Chairman.

3.18 Hold Harmless.

Lessee shall expressly agree that the State of Hawaii, the Board, the Chairman, the Department, and the owner of the surface rights and improvements, if not the State of Hawaii, or State lessee of surface rights, if there be one, the officers, agents and employees of each and every one of the foregoing, shall be free from any and all liabilities and claims for damages and/or suits for or by reason of death or injury to any person or damage to property of any kind whatsoever, whether the person or property of lessee, its agents or employees, or third persons, from any cause or causes whatsoever caused by any occupancy, use, operation or any other activity on leased lands carried on by lessee, its agents or contractors, in connection therewith; and lessee shall covenant and agree to indemnify and to save harmless the State of Hawaii, the Board, the Chairman, the Department, owner or lessee of surface rights if there be one, and their officers, agents, and employees from all liabilities, charges, expenses (including counsel fees), and costs on account of or by reason of any such death or injury, damage, liabilities, claims, suits or losses, but lessee shall not be liable hereunder in the event of the negligence or willful misconduct of parties other than lessee.

3.19 Title.

The State of Hawaii does not warrant title to the leased lands or the geothermal resources and associated by-products which may be discovered thereon; the lease is issued only under such title as the State of Hawaii may have as of the effective date of the lease or thereafter acquire. If the interest owned by the State in the leased lands includes less than the entire interest in the geothermal resources and associated by-products for which royalty is payable, then the royalties provided for in the lease shall be paid to the State only in the proportion which its interest bears to said whole and undivided interest in said geothermal resources and associated by-products for which royalty is payable; provided, however, that the State is not liable for any damages sustained by the lessee.

If any claim is asserted or any action or proceeding instituted by any third party claiming title to the leased lands or any part thereof or any interest therein or in any production therefrom, adverse to the State of Hawaii or in hostility to rights claimed in good faith by Lessee under this lease, then during the pendency of such controversy and until ninety (90) days after final determination thereof, lessee may defer or discontinue all operations on the leased lands, or if it continues to operate, it may deposit royalties accruing hereunder in respect to the production therefrom in any bank in the State of Hawaii qualified as a depository of State funds to abide the final determination of such controversy. The Board shall receive earned interest with principal upon prevailing in litigation.

51-1

RULE NO. 4
PROCEDURES FOR LEASING OF STATE LANDS

4.1 Application to Board; Filing Fee

Any person as defined in these regulations may apply to the Board for a mining lease on ^{such lands} lands described in Rule 3.2 or the Board at its discretion may call for nominations to lease. The applicant shall submit three copies of a written application on forms provided by the Department and all application forms must be completed in full, signed by the applicant or his authorized representative with proof of authorization, three (3) copies of all necessary exhibits, and the filing fee.

Each application for a mining lease shall be accompanied by a non-refundable filing fee in the amount of \$100.00.

4.2 Lease Application Exhibits

Each application for a geothermal mining lease shall be accompanied by the following exhibits:

- a. An accurate description and map of the land desired to be leased.
- b. A description of the known or potential geothermal resource desired to be leased for exploration and development.
- c. A geologist's preliminary survey report on the surface and sub-surface geology, nature and occurrence of the known or potential geothermal resources, surface water resources, and ground water resources, and an assessment of the environmental impact from geothermal resource exploration and development.
- d. ^{brief} Preliminary proposal of plan for geothermal exploration and development.

Information deemed proprietary by the applicant shall be kept confidential by the Board for a period of six months after any lease granted for any of the land sought for leasing. [The following information] may be made public by the Board:

(1) Applicant's name and address.

(1) ^{only}
(2) A description of the land nominated for leasing.

(3) A general description of the geothermal resources to be explored and developed.

c. ^{Statement}
4.3 Public Notice of Lease Applications.

As soon as practicable after receipt of an application, a notice of the lease application shall be published in a newspaper of general circulation in the county where the land nominated for leasing is located at least once in each of three successive weeks, describing the land nominated for leasing and the geothermal resources to be explored and developed.

Handwritten notes:
The applicant is qualified to hold a mining lease.
has applied under previous rule.
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4.4 Consideration of Applications.

practical Within twelve weeks from the date of the first publication of notice *or such* further time as may be reasonably necessary, the Board shall decide whether or not to lease the land and if deemed appropriate may modify the area sought to be leased. Prior to making its decisions, the Board shall, when appropriate, *have a full evaluation made* evaluate fully the potential effect of geothermal exploration and development on the environment, fish and wildlife resources, aesthetics, population, and other resources in the area. This evaluation will consider the potential impact of possible geothermal development and utilization including the construction of power generating plants and transmission facilities *which may or may not be included in a mining lease*. As deemed appropriate, the Board shall consider the views and recommendations of other governmental agencies, organizations, industries and lease applicants and shall consider all other potential factors, such as use of the land and its natural resources, the need for geothermal energy development and socio-economic conditions consistent with multiple-use management principles. The Board's decision whether or not to lease and selection of the area to be offered for lease shall be made after due notice of public hearing to all parties in interest.

4.5 Rejection of Lease Applications.

If the Board determines that the existing or reasonably foreseeable future use of the land being sought for lease would be of greater benefit to the State than the proposed mining use of the land, it shall disapprove the application for a mining lease of the land *without putting the land to auction*.

4.6 Approval of Lease Applications.

to provide for orderly and optimum geothermal development,
If the Board determines that the proposed mining use of the land would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land, the Board shall determine the area to be offered for lease and determine any special terms and conditions to be included in the lease to protect the environment, to permit use of the land for other purposes, and to protect other natural resources.

4.7 Public Notice of Lease Sales.

When the Board has approved a mining lease to be offered for sale by competitive bidding at public auction, it shall cause a notice to be published in a newspaper of general circulation in the State and in the county where the land is located at least once in each of three successive weeks, setting forth the description of the land, the geothermal rights to be leased, and the terms and conditions of the lease sale including *or minimum* upset rental rate, and royalties. The notice shall also indicate that the proposed plan of operation as required by Rule 7.2 must be filed before the lease can be granted *lessor shall*.

4.8 Qualification of Bidders.

announced date of the
On or before twenty (20) days prior to the public auction, all bidders shall satisfy the Board of their financial ability to conduct geothermal explorations and drill for and develop geothermal resources.

4.8 Bidding Requirements and Procedures

a. All bids for a mining lease shall be delivered in an envelope sealed and identified as to the lease being bid and the name and address of the bidder to the office of the Department of Land and Natural Resources by or before the hour and date set ^{and published} for the opening of bids.

b. All bids must be accompanied by cash, certified check or cashier's check in the amount of one-half of the amount bid for the right to discover, develop, and utilize the geothermal resources of the land being bid for lease and ^{accompanied} by evidence of qualifications ^{to hold a mining lease} as prescribed by Rule 3.3. ~~regulations~~ The Board shall not consider bids which are not accompanied by the required cash, certified or cashier's check and evidence of qualifications.

c. Any bid may be withdrawn at any time prior to the hour announced in the public notice of competitive lease sale for the opening of sealed bids, provided that a written request for such withdrawal executed by the bidder or his authorized representative is first filed with the Department of Land and Natural Resources. No withdrawal of seal bids will be permitted after the hour set in the public notice for opening of bids. The withdrawal of a bid as herein

must all of attached

based on a minimum
set by the Board

permitted shall not prejudice the right of a bidder to submit a new bid by or before the time and date of bid opening.

d. All bidders shall bid on: (1) The amount of bond to be paid the State of Hawaii for the right to discover, develop, and produce any geothermal resources to be found on the land sought to be leased and (2) The amount of annual rental, to be paid ^{for the term of the mining lease to} the State of Hawaii for the use of so much of the land surface as may be reasonably necessary to develop and produce any such geothermal resources.

e. All sealed bids shall be opened and read aloud publicly at the time and place specified in the public notice for the opening of bids. Bidders or their authorized representatives are invited to be present. No bids will be accepted or rejected at the opening of bids.

f. All bidders are cautioned against collusion with or intimidation of other bidders. If there is reason for believing that collusion exists among ^{any of} the bidders, any or all bids may be rejected and none of the participants in such collusion will be considered in future competitive lease sales.

4.9 Award and Execution of Leases

a. The right to reject any and all bids

or to waive any defects therein as may be deemed best for the interests of the State is reserved to the Board.

b. All sealed bids shall be compared and the lease awarded on the basis of the highest TOTAL SUM of the amount ^{and} of the bonus bid plus the product of the annual rental bid times ten years.

c. The award of the mining lease, if made shall be made within ^{sixty} (60) days after the opening of sealed bids but in no case will an award be made until all necessary investigations are made as to the qualification of the highest bidder to hold a mining lease. If the Board fails to accept the highest responsible bid for a lease within ^{sixty} (60) days after the opening of sealed bids, all bids for the lease shall be considered rejected and deposits returned.

d. If the lease is awarded, copies of the lease shall be sent the successful bidder who shall be required to execute ^{and return to the chairman} them ⁽³⁰⁾ within thirty days from receipt thereof together with the first year's rental, the balance of the bonus bid, and the required bond or bonds. The lease shall then be executed by the authorized officers

of the Board and a copy mailed to the lessee.

e. If the successful bidder ^{refuses or} fails to execute the lease, ~~pay~~ the amounts required, and file the necessary bond or bonds the Board shall have just cause for annulment of the lease award and forfeiture of the successful bidder's deposit. If the successful bidder refuses or fails to execute the lease, the Board may award the lease to the second highest responsible bidder. If the second highest bidder refuses or fails to execute the lease, the Board may award the lease to the third highest responsible bidder. In the failure or refusal of the second or third highest bidder to execute the lease and make the necessary submittals their deposits shall likewise be forfeited to the State. Provided, however, that the Board may at its discretion in the best interest of the State hold another competitive lease sale.

4.8

4.9 Bidding Requirements.

On or before ~~twenty (20)~~ days prior to the public auction, each prospective bidder shall deposit with the Board a certified or cashier's check in the amount of \$500. [The deposit shall be refunded to unsuccessful bidders within two days after the public auction, but] the deposit shall be forfeited by prospective bidders who fail to bid.

4.10 Award of Leases.

The lease offered for bid shall be awarded to the highest qualified bidder. The right to reject any and all bids is reserved to the Board. If the Board fails to accept the highest bid for the lease within 30 days after the date of the public auction all bids for that lease will be considered rejected. Deposits on rejected bids shall be returned. Within two days after acceptance by the Board of the highest bid, the successful bidder shall pay to the Board the amount of the first year's rental bid and the \$500 deposit shall be credited against such sum.

Three copies of the lease will be sent to the successful bidder who shall within 30 days from delivery thereof be required to execute them, to file the required bond or bonds, and to submit the proposed plan of operation as required by Rule 7.2. When the three copies of the lease are executed by the successful bidder and returned to the Chairman, the lease will be executed by the authorized officers of the Board and a copy will be mailed to the lessee. If the successful bidder fails to execute the lease or otherwise comply with the applicable regulations, his deposit will be forfeited.

RULE NO. 5

PROCEDURES FOR LEASING OF RESERVED LANDS

5.1 Application to Board.

Applications for mining lease on reserved lands shall be made to the Board in accordance with Rule 4.1 and 4.2.

5.2 Approval of Leasing by Public Auction.

a. If an application for a mining lease on reserved lands has followed Rules 4.1 through 4.6 and the Board has determined that for such application the proposed geothermal mining use of the land would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land sought to be leased, the Board has the option of approving the granting of the mining lease: (1) by public auction in accordance with Rule 5.2(b); or (2) without public auction in accordance with Rule 5.3.

b. If the occupier or his assignee of the right to obtain a mining lease should fail to apply for a mining lease within six months from the date of notice from the Board of its finding that it is in the public interest that the geothermal resources in the reserved lands be mined, a mining lease shall be granted by public auction under Rule 4, provided that the bidders at the public auction shall bid on an amount to be paid to the State for a mining lease granting to the lessee the right to develop the geothermal resources reserved to the State.

6.1 ~~Compensation and Expenses~~
The Mining Lessee shall negotiate in good faith with the occupier of State or reserved lands leased by the Board for the settlement of all claims for damages to crops, improvements, or surface of the land caused by the mining lessee's operations. The Lessee shall hold the Board exempt and harmless from and against any and all such damage claims, provided, however, the Board shall cooperate fully with the Lessee, at Lessee's expense, in negotiating or contesting such damage claims.



5.3 Approval of Leasing Without Public Auction.

The Board may, by the vote of 2/3 of its [voting] members, grant a mining lease on reserved lands to the [occupier] thereof without public auction.

~~Such a mining lease may be granted to a person other than the occupier if the occupier has assigned his rights to apply for a lease to another person, in which case only such an assignee may be granted a geothermal mining lease.~~

the Board shall determine the annual rental for the right to develop and utilize the geothermal resources reserved to the State and the property on production as prescribed in Rule 3.13.

RULE NO. 6

SURFACE RIGHTS AND OBLIGATIONS

6.1 Compensation to Occupiers.

Any ~~a.~~ The occupier of State or reserved lands [leased by the Board shall] be entitled to ~~a~~ reasonable rental from the mining lessee for the use of the surface for exploration and mining operations. Also if the occupier suffers damages to his crops, his improvements, or the surface condition of the land caused by exploration and mining operations or by the failure of the mining lessee to properly restore the land after termination of operations, the occupier shall be reimbursed the full extent of the damages by the mining lessee; provided, that the occupier was not granted a mining lease without public auction as provided in Rule 5.]

no H ~~b.~~ *However,* Nothing herein shall be construed to prevent the occupier from demanding and receiving rentals from the lessee of the mining lease, or to forbid and prevent the occupier and the lessee from agreeing upon the amount of damages to be paid the occupier and the terms and conditions of payment. The occupier may in writing before or within thirty days after the public auction notify the Board that he elects to have the amount of damages and the amount of rentals to be paid as a result of the mining lease determined by arbitration with the successful bidder. In such event, the occupier shall notify the successful bidder of his election to arbitrate, and the arbitration shall proceed in accordance with Chapter 658 of the Hawaii Revised Statutes. The arbitrators in fixing the amount of damages to be paid to the occupier shall award him the amount which in their judgment shall fairly compensate the occupier for the damages he may suffer to his crops or improvements or to the surface or condition of his land caused by the mining or other incidental operations, including exploratory work, and a reasonable rental for the use of the surface.

6.2 Mining Lessee's Rights.

The lessee shall be entitled to use and occupy only so much of the surface of leased lands as may be required for all purposes reasonably incident to exploration for, drilling for, production and marketing of geothermal resources and associated by-products produced from the leased lands, including the right to construct and maintain thereon all works, buildings, plants, waterways, roads, communication lines, pipelines, reservoirs, tanks, pumping stations or other structures necessary to the full enjoyment and development thereof, consistent with a plan of operations and amendments thereto, as approved by the Chairman.

6.3 General Conditions.

a. Use of State lands under the jurisdiction and control of the Board are subject to the supervision of the Board. Use of State lands under the control of other State agencies are subject to the supervision of the appropriate State agency consistent with these rules.

b. The Board reserves the right to lease, sell or otherwise dispose of the surface of State lands embraced within a mining lease, insofar as said surface is not necessary for use by the lessee in his exploration, development and production of the geothermal resources and associated by-products, but any lease, sale, or other disposal of surface rights if made, shall be subject to the rights of the mining lessee.

c. The Chairman or his designated representative shall be permitted at all reasonable times to go in and upon the leased lands and premises, during the term of a mining lease, to inspect the operations and the products obtained from the leased lands and to post any notice that the Board may deem fit and proper.

d. During operations, the lessee shall regulate public access and vehicular traffic to protect human life, wildlife, livestock and property from hazards associated with the operations. For this purpose, the lessee shall provide warnings, fencing, flagmen, barricades, well and hole coverings and other safety measures as appropriate. Restrictions on access must be approved by the Chairman as part of the Plan of Operations required under Rule 7.2.

e. Lessee shall take all necessary steps in the exploration, development, production and marketing of geothermal resources to avoid a threat to life or property or pose an unreasonable risk to subsurface, surface or atmospheric resources.

RULE NO. 7

GEOTHERMAL MINING OPERATIONS UNDER THE LEASE

7.1 General Terms.

a. The operator of a lease shall conduct all operations in a manner that will conform to the best practices and engineering principles in use in the industry. Operations shall be conducted in such a manner as to protect the natural resources including without limitation, geothermal resources, and to obtain efficiently the maximum ultimate recovery of geothermal resources consistent with other uses of the land with minimal impact on the environment. Operations shall be conducted with due regard for the safety and health of employees. The operator shall promptly remove from the leased lands or store, in an orderly manner, all scraps or other materials not in use and shall notify the Chairman of all accidents within 24 hours and submit a written report within 30 days.

b. The operator of a lease shall comply with and be subject in all respects to the conditions, limitations, penalties and provisions of the laws of the United States, the State of Hawaii and all valid ordinances of the city and counties applicable thereto.

c. The operator of a lease shall take all reasonable precautions to prevent waste and damage to any natural resources including vegetation, forests, and fish and wildlife; injury or damage to persons, real or personal property; and degradation of the environment. The Chairman may inspect lessee's operations and issue such orders as are necessary to accomplish these purposes.

d. The Chairman is authorized to shut down any operation which he determines are unsafe or are causing or can cause pollution of the natural environment or waste of natural resources including geothermal resources upon failure by lessee to take timely, corrective measures previously ordered by the Chairman.

e. When required by the Chairman, the lessee shall designate a local representative empowered to receive service of civil or criminal process, and notices and orders of the Chairman issued pursuant to these rules as prescribed in Rule 5.2.

f. In all cases where exploration or mining operations are not to be conducted by the lessee but are to be conducted under authority of an approved operating agreement, assignment or other arrangement, a designation of operator shall be submitted to the Chairman prior to commencement of operations. Such a designation will be accepted as authority of the operator or his local representative to act for the lessee and to sign any papers or reports required under these rules. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the Chairman.

g. The operator of a lease shall commence geothermal exploration or drilling operations, other than casual use, on the leased land within three years from the date of acquisition of the lease, except that if such operator holds more than one lease to geothermal land, the provisions shall apply only to the first lease.

7.2 Plan of Operations Required.

13 A lessee shall not commence operations of any kind other than casual use prior to submitting to the Chairman and obtaining his approval of a Plan of Operations. Such a plan shall include:

- a. The proposed location and elevation above sea level of derrick, proposed depth, bottom hole location, casing program, proposed well completion program and the size and shape of drilling site, excavation and grading planned, and location of existing and proposed access roads.
- b. Existing and planned access, access controls and lateral roads.
- c. Location and source of water supply and road building material.
- d. Location of camp sites, air-strips and other supporting facilities.
- e. Other areas of potential surface disturbance.
- f. The topographic features of the land and the drainage patterns.
- g. Methods for disposing of waste material.

- h. A narrative statement describing the proposed measures to be taken for protection of the environment, including, but not limited to the prevention or control of (1) fires, (2) soil erosion, (3) pollution of the surface and ground water, (4) damage to fish and wildlife or other natural resources, (5) air and noise pollution, and (6) hazards to public health and safety during lease activities.
- i. All pertinent information or data which the Chairman may require to support the Plan of Operations for the utilization of geothermal resources and the protection of the environment.
- j. Provisions for monitoring deemed necessary by the Chairman to insure compliance with these rules for the operations under the plan.
- k. The information required above for items (a) through (f) may be shown on a map or maps of 1:24,000 scale or larger.

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7.3 Amendments to Plan of Operations. 8

After completion of all operations authorized under any previously approved notice or plan, the lessee shall not begin to redrill, repair, deepen, plug back, shoot, or plug and abandon any well, make casing tests, alter the casing or liner, stimulate production, change the method of recovering production, or use any formation or well for brine or fluid injection until he has submitted to the Chairman in writing a new plan of operations and has received written approval from him. However, in an emergency a lessee may take action to prevent damage without receiving prior approval from the Chairman, but in such cases the lessee shall report his action to the Chairman as soon as possible.

7.4 Drilling Operations

a. Upon commencement of drilling operations, the lessee shall mark each drilling site and each completed well site in a conspicuous place with his name or the name of the operator, the lease number and the number of the well. The lessee shall take all necessary means and precautions to preserve these markings.

b. The lessee shall diligently take all necessary precautions to keep all wells under control at all times; utilize trained and competent personnel; utilize properly maintained equipment and materials; and use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area.

c. When necessary or advisable, the Chairman shall require that adequate samples be taken and tests or surveys be made using techniques consistent with industry practices, without cost to the State of Hawaii, to determine the identity and character of geologic formations; the quantity and

At the time the Chairman shall either approve, subject to any terms or conditions he may specify at his discretion, or disapprove the Plan of Operation within ^{sixty} (60) calendar days after the date of receipt of the plan.

quality of geothermal resources; pressures, temperatures, rate of heat and fluid flow; and whether or not operations are being conducted in a manner of best interest of the public.

d. Before any work is commenced to abandon any well, notice shall be given by the operator to the Chairman, which notice shall show the condition of the well and the proposed method of abandonment. Unless otherwise specified in the plan of operation, no well may be abandoned without prior approval of the Chairman. However, the operator of a lease shall promptly plug and abandon any well that is not used or deemed useful by the Board. No production well shall be abandoned until its lack of capacity for further profitable production of geothermal resources has been demonstrated to the satisfaction of the Chairman. A producible well may be abandoned only after receipt of written approval by the Chairman. Equipment shall be removed, and premises at the well site shall be restored as near as reasonably possible to its original condition immediately after plugging operations are completed on any well except as otherwise authorized by the Chairman. When drilling operations have been temporarily suspended drilling equipment shall not be removed from any well without taking adequate measures to close the well and protect subsurface resources. Upon failure of lessee to comply with any requirements under this rule, the Chairman is authorized to cause the work to be performed at the expense of lessee and the surety.

7.5 Waste Prevention.

a. All mining leases shall be subject to the condition that the lessee will, in conducting his exploratory development and producing operations, use all reasonable precautions to prevent waste of geothermal resources and other natural resources found or developed in the leased lands. *optimum use*

b. In the event any well has been, is or shall be completed on other than State or reserved land draining geothermal resources from the leased land, and if such well is producing geothermal resources in commercial quantities, provided lessee is not drilling or has not heretofore drilled an offset well thereto on the land then the Board may notify the lessee in writing to drill an offset well thereto, and within one hundred twenty (120) days from the date of such notice, the lessee shall commence operations for the drilling of an offset well on the leased land to the same zone as that zone from which such well is producing geothermal resources or shall unitize with the well that is draining State land or pay to the State compensatory royalty. For the purpose of this section an offset well shall mean a well which a reasonably prudent geothermal operator would drill under similar circumstances.

c. The Chairman shall determine the value of production accruing to the Board and the compensation due to the Board where there is loss through waste as reimbursement for such loss. Payment for such losses will be paid when billed.

d. Subject to lessee's right to surrender ^{a mining} the lease, where the Board determines that production, use, or conversion of geothermal resources ^{and conversion} under a geothermal lease is susceptible of producing a valuable by-product or by-products, including commercially demineralized water contained in or derived from such geothermal resources, ^{and if such water is suitable} for beneficial use in accordance with ^{the Board's Ground} applicable State water laws, the Chairman shall require substantial ^{beneficial} production or use thereof, except where ^{the Board} he determines that:

would be 24

(1) Beneficial production or use ^{is} not in the interest of conservation of natural resources;

(2) Beneficial production or use would not be economically feasible; or

(3) Beneficial production and use ^{otherwise} should not be required for other reasons satisfactory to him ^{would not be in the public interest}

7.6 Protection of Other Resources.

a. The lessee shall remove the derrick and other equipment and facilities within sixty (60) days after lessee has ceased making use thereof in its operations.

b. All permanent operating sites where required shall be landscaped or fenced so as to screen them from public view as far as possible. Such landscaping or fencing shall be approved in advance by the state and kept in good condition.

c. All drilling and production operations shall be conducted in such manner as to eliminate as far as practicable dust, noise, vibration, or noxious odors. Operating sites shall be kept neat, clean and safe. Drilling dust shall be controlled to prevent widespread deposition of dust. The determination as to what is detrimental is a state responsibility.

d. Wastes shall be discharged in accordance with all Federal, State and local requirements and prohibitions.

e. Any operations disturbing the soil surface, including road building, construction, and movement of heavy equipment in support of or relating to specific geothermal exploration or development activities shall be conducted in such manner as will not result in unreasonable damage to trees and plant cover, soil erosion, or degradation of water resources of the State.

f. Existing roads, except public roads, and bridges on or serving the area under lease shall be maintained in a condition equal to or better than that before use. New roads and bridges shall be located, constructed, and maintained in accordance with State specifications.

Marketable
g. Timber damaged, destroyed, or used on ^{State lands} [the area under] lease shall be compensated for at market value to the State. Borrow pit material shall not be obtained from State lands without permission and payment of market value.

h. Improvements, structures, telephone lines, trails, ditches, pipelines, water developments, fences and other property of the state or other lessees and permanent improvements and crops of surface owners, shall be protected from damage and repaired or replaced when damaged.

i. Access to drilling or production sites by the public shall be controlled by the lessee to prevent accidents or injury to persons or property.

j. Areas cleared and graded for drilling and production facility sites shall be kept to a reasonable number and size, and be subject to Board approval.

k. Lessee shall conduct its operations in a manner which will not interfere with the right of the public to use of public lands and waters.

7.7 Suspension of Operations.

In the event of any disaster or of pollution caused in any manner or resulting from operations under a lease, lessee shall suspend any drilling and production operations, except those which are corrective, or mitigative, and immediately and promptly notify the Chairman. Such drilling and production operations shall not be resumed until adequate corrective measures have been taken and authorization for resumption of operations has been made by the Chairman. The lessee shall suspend any drilling and production operations, except those which are corrective or mitigative, if the Board shall determine that there is a substantial likelihood that continued operations would endanger public health or safety or cause serious damage to property or the natural environment. Such operations shall not be resumed until the Board shall determine that adequate corrective measures are feasible and have been taken to eliminate such substantial likelihood.

7.8 Diligent Operations Required.

The lessee shall be diligent in the exploration or development of the geothermal resources on the leased lands. Failure to perform diligent operations may subject the lease to termination by the Board. Diligent operations mean exploratory or development operations on the leased lands, including without limitation geochemical surveys, heat flow measurements, core drilling, or drilling of a well for discovery, evaluation, or production of geothermal resources.

7.9 Records and Reports.

a. Lessee shall at all times maintain full and accurate records of production and payments relating to lessee's operations and activities upon and in connection with said leased lands. All books and records of lessee pertaining to or necessary in determining royalty payments shall be open to inspection at all reasonable times by the authorized representatives of the Department.

b. The lessee shall furnish to the Board for its confidential use, copies of all physical and factual exploration results, logs and surveys which may be conducted, well test data, and other data resulting from operations under the lease. Such information shall be kept confidential for a period of one year from date of receipt, or longer at the discretion of the Board. *as a trade secret*

7.10 Surrender of Premises.

Within 90 days from the expiration of the lease, the lessee shall restore the lands covered by said lease or permit to their original condition insofar as it is reasonable to do so, except for such roads, excavations, alterations or other improvements which may be designated for retention by the Board or any State agency having jurisdiction over the affected lands. Where determined necessary by the Board or such State agency, cleared sites and roadways shall be replanted with grass, shrubs or trees.

PART II - DRILLING FOR GEOTHERMAL RESOURCES

RULE NO. 8

GENERAL

8.1 Purpose.

on government or private land which are statewide in application
All wells drilled in the State of Hawaii for the discovery, evaluation, development, production, utilization and injection of geothermal resources or by-products shall be subject to Part II of these regulations and shall be drilled, operated, and maintained or abandoned in such a manner as to prevent waste, *and* *use of geothermal resources to prevent degradation of the environment* or minimize damage or the threat of damage to life, health, property, environment, ground-water resources, and geothermal resources.

8.2 Designation of Agent.

Every owner or operator of any well shall designate an agent, who resides in the State of Hawaii, giving his post office address, upon whom may be served all orders, notices, and processes of the Department or any court of law. Every person so appointing an agent shall, within five days after the termination of any such agency, notify the Chairman in writing of such termination, and unless operations are discontinued, shall appoint a new agent. All changes in the address of an agent must be recorded with the Chairman within five days of the change of the address..

RULE NO. 9

DRILLING OF GEOTHERMAL WELLS

9.1 Notice of Intent to Drill; Permit.

Deepen, Redrill, Plug, or Alter Casing
Before a person, as defined in these regulations, can commence the drilling of a new well; the deepening, redrilling, plugging or altering of casing of an existing well; or the redrilling of an abandoned well, he must file with the Chairman written Notices of Intent to Drill or to Deepen, Redrill, Plug or Alter Casing, as the case may be, accompanied by the appropriate fee and bond (see Rules 9.3 and 9.4). Drilling operations shall not commence until a permit has been issued by the Chairman. If operations have not commenced within one year of the receipt of the notice, the notice will be canceled. The Notices of Intent shall contain the following:

a. The exact location of the well and the elevation of the floor or Kelly bushing of the proposed derrick. A resurvey by a licensed surveyor may be required if there is a dispute with the neighboring landowner over the location of a well or if the Department finds unreconcilable differences in the survey data submitted.

b. The number or other designation by which the well shall be known. Such number or designation shall be subject to the approval of the supervisor.

c. The operator's proposed casing program.

d. The purpose of the well and the owner's or operator's estimate of the depths between which production or injection will be attempted.

Notices of Intent to Drill for shallow temperature test holes of less than a depth of 500 feet must also be filed with the Chairman and drilling operations shall not commence until a permit has been issued by the Chairman.

9.2 Supplementary Notices.

A supplementary notice must be filed if there is any change in the original Notice of Intent and written approval must be received from the Chairman before the work is started. *In an emergency, the Chairman or his designated representative may give verbal approval to the operator to begin work.*

9.3 Filing Fees.

deemed necessary to carry out the purpose of these drilling regulations.

42 Each Notice of Intent for shallow temperature test holes shall be accompanied by a non-refundable filing fee in the amount of \$25.

Each Notice of Intent for any other well shall be accompanied by a non-refundable filing fee in the amount of \$100.

9.4 Bonds.

a. All wells require a bond. Each person who engages in the drilling, redrilling, deepening, maintaining or abandoning of any well shall file with the Chairman an indemnity bond in the sum of five thousand dollars (\$5,000) for each well or twenty-five thousand dollars (\$25,000) for any number of wells. The bonds shall be executed by such person, as principal, and by an authorized surety company, as surety, conditioned that the principal named in the bonds shall faithfully comply with these regulations. The bonds shall secure the State against all losses, charges, and expenses incurred to it by the principal named in the bond.

b. Bonds shall remain in force for the life of the well or wells and may not be released until the well or wells are properly abandoned or another valid bond is substituted therefor. Any person who acquires the ownership or operation of any well or wells shall within five days after acquisition file with the Chairman an indemnity bond in the sum of \$5,000 for each well acquired or a \$25,000 blanket bond for any number of wells acquired.

9.5 Well Spacing.

a. Any well drilled for the discovery and/or production of geothermal resources or for injection of geothermal resources shall be located more than 100 feet from and within the outer boundary of the parcel of land on which the well is situated, or more than 100 feet from a public road, street, or highway dedicated prior to the commencement of drilling. Where several contiguous parcels of land under one or more ownerships are operated as a single geothermal resources operating unit, the term "outer boundary line" means the outer boundary line of the lands included in such a unit.

*unless modified by the
Chairman upon request.*

b. The Chairman shall approve proposed well spacing programs or prescribe such modifications to the programs as it deems necessary for proper development and conservation of geothermal resources, giving consideration to such factors as, but not limited to, topographic characteristics of the area, hydrologic, geologic, and reservoir characteristics of the area, the number of wells that can be economically drilled to provide the necessary volume of geothermal resources for the intended use, minimizing well interference, unreasonable interference with multiple use of lands, and protection of the environment.

9.6 Directional Drilling.

Where the surface of a parcel of land containing one acre or more is unavailable for drilling, a directionally drilled (other than a vertical direction) well may be located upon another parcel which may or may not be continuous. The location of such a well shall be not less than 25 feet from the outer boundary of the parcel on which it is located and not less than 25 feet from an existing street or road. The production or injection interval of such a well shall be not less than 100 feet from the outer boundary of the parcel into which it is drilled. The directional well surveys shall be filed with the Department for all wells directionally drilled.

9.7 Casing Requirements.

a. General. All wells shall be cased in such a manner as to prevent or minimize damage to the environment, ground water resources, geothermal resources, life, health and property. The permanent well head completion equipment shall be attached to the production casing or to the intermediate casing if production casing does not reach to the surface. Department specifications for casing strings shall be determined on a well-to-well basis. All casing strings reaching the surface shall provide adequate anchorage for blowout-prevention equipment, hole pressure control and protection for all natural resources. The casing requirements described below are general and should be used as guidelines in submitting proposed casing programs required to be filed with Notices of Intent.

b. Conductor Pipe. Conductor pipe shall be installed to a depth of a minimum of 50 feet and a maximum of 150 feet. In special cases the Chairman may allow conductor pipe to be run and cemented at deeper depths. The annular space between the hole and pipe shall be cemented solid to the surface. Blowout-prevention equipment (BPOE) approved by the Chairman shall be installed on the conductor pipe on all exploratory wells and on development wells, when deemed necessary by the Chairman.

c. Surface Casing. Surface casing shall be installed to provide for control of formation fluids, for protection of ground water resources and for anchorage of blowout-prevention equipment. All surface casing shall be cemented solid to the surface.

Surface casing shall be set to a minimum depth of ten percent of the proposed total depth of the well or 500 feet, whichever is greater. If useable basal ground water is present or reasonably suspected to exist in the area, the depth of the surface casing shall be approved by the Chairman. If subsurface geological, hydrological, or geothermal conditions are known in or

in the vicinity of the area to be drilled, such conditions shall be used in determining and approving the depth of surface casing. A second string of surface casing may be required if the first string has not been cemented through a sufficient series of low permeability, competent rock formations and either a rapidly increasing thermal gradient or rapidly increasing formation pressures are encountered.

d. Intermediate Casing. Intermediate casing shall be required for protection against anomalous pressure zones, cave-ins, washouts, abnormal temperature zones, uncontrollable lost circulation zones or other drilling hazards. Intermediate casing strings shall be cemented solid to the surface.

e. Production Casing. Production casing may be set above or through the producing or injection zone and cemented above such zones. Sufficient cement shall be used to exclude overlying formation fluids from the zone, to segregate zones and to prevent movement of fluids behind the casing into zones that contain ground water. Production casing shall either be cemented solid to the surface or lapped into intermediate casing, if installed. If the production casing is lapped into an intermediate string, the casing overlap shall be at least 50 feet, the lap shall be cemented solid and the lap shall be pressure tested to ensure the integrity of the lap.

In order to reduce casing corrosion, production casing used to produce corrosive brine reservoirs shall be of the same nominal inside diameter from the shoe of the casing to the ground surface.

f. Cement. All cement used in cementing the various types of casing required herein shall contain a high temperature admix, unless this can be waived by the Chairman in accordance with the particular circumstances existing in the area.

9.8 Mud Return Temperature Logging.

The temperature of the return drilling mud shall be monitored continuously during drilling of the surface casing portion of the drill hole. Either a continuous temperature monitoring device shall be installed and maintained in working condition, or the temperature shall be read manually. In either case, return mud temperatures shall be entered into the log book after each joint of pipe has been drilled down (about every 30 feet).

9.9 Electric Well Logging.

All wells, except observation wells, shall be logged with an induction electrical log, or other approved log from total depth to the bottom of the conductor pipe before installing casing, except in the case where air is used as the drilling medium. This requirement may vary from area to area, depending upon the amount of subsurface geological or hydrological data [is] available, and may not be required under certain conditions, subject to the approval of the Chairman.

9.10 Blowout-Prevention Equipment.

a. General. Blowout-prevention equipment (BPOE) capable of shutting-in the well during any operation shall be installed on the surface casing and maintained ready for use at all times. BOPE pressure tests shall be witnessed by the Chairman or his designated representative on all exploratory wells prior to drilling out the shoe of the surface casing. The decision to require and witness BOPE pressure tests on other types of wells shall be made on a well-to-well basis. In any case, the Chairman must be contacted well in advance of a scheduled pressure test to allow time for travel to the well site to witness the test.

BOPE installations shall include high temperature-rated packing units and ram rubbers if available and shall have a minimum working-pressure rating equal to or greater than the lesser of: (1) a pressure equal to the product of the depth of the BOPE anchor string in feet times one (1) psi per foot; (2) a pressure equal to the rated burst pressure of the BOPE anchor string; or (3) a pressure equal to 2000 psi.

b. BOPE Classes. The requirements for blowout-prevention equipment ^{shall be subject to review and approval by the Commission} shall be guided by the following:

(1) NO BOPE: Required for known shallow, low temperature, low pressure areas where down-hole water temperatures are less than 100 degree Celsius at depths less than 500 feet or where temperature and pressures are unknown and the proposed depth of drilling is less than 500 feet.

(2) CLASS 2M BOPE (API CLASS 2M-A or 2M-RE): Required for low pressure areas where known temperatures are above 100 degree Celsius at depths less than 2,000 feet, or where subsurface temperatures and pressures are unknown and the proposed depth of drilling is less than 2,000 feet. Equipment shall include: an annular BOPE or pipe-ram/blind-ram BOPE with minimum working-pressure ratings of 1,000 psi installed on the surface casing so that the well can be shut-in at any time; hydraulic and/or manual actuating system; kelly cock; a fill-up line installed above the BOPE; a kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and a flow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner so as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(3) CLASS 3M BOPE (API CLASS 2M-RSRA or EQUIVALENT): Required for medium pressure areas where subsurface pressures are less than 1000 psi or where pressures are unknown and the proposed total depth of the well is greater than 2000 feet. Equipment shall include: annular BOPE and pipe-ram/blind-ram BOPE with a minimum working-pressure rating of 2,000 psi installed on the surface casing so that the well can be shut-in at any time and with a double-ram preventer having a mechanical locking device; a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high pressure auxiliary backup system equipped with dual controls, one at the driller's station and one at least 50 feet away from the well head; kelly cock and standpipe valve; a fill-up line installed above the BOPE; a kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and a flow-down line fitted with two valves installed below the BOPE with blow-down line directed in such a manner as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(4) CLASS 1A BOPE: Required in areas where dry steam is known to exist and/or formation pressures are less than hydrostatic and air is used as the drilling medium. Equipment shall include: a rotating-head installed at the top of the BOPE stack; a pipe-ram/blind-ram BOPE, with a minimum working-pressure rating of 1,000 psi, installed below the rotating-head so that the well can be shut-in at any time; a banjo-box steam diversion unit installed below the double-ram BOPE, fitted and a muffler capable of lowering sound emissions to within acceptable standards; a blind-ram BOPE, with a minimum working-pressure rating of 1,000 psi, installed below the

*required on final casing string to be
cemented back to surface*

banjo-box so that the well can be shut-in while removing the rotating-head during bit changes; a gate valve, with a minimum working-pressure rating of 300 psi, installed below the blind-ram so that the well can be shut-in after the well has been completed, prior to removal of the BOPE stack; all ram-type BOPE shall have a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high-pressure backup system; dual control stations for hydraulic backup system, one at the driller's station and the other at least 50 feet away from the well head; kelly cock and standpipe valves; a kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and a blow-down line fitted with two valves installed below the BOPE. This line shall be directed so as to minimize any safety hazard to personnel. If any portion of a well is drilled using mud, Class 2M BOPE shall be installed on the surface casing so that the well can be shut-in at any time.

*may
call*

9.11 Well Completion.

A well is considered to be completed 30 days after drilling operations have ceased and the well is capable of producing a geothermal resource, or 30 days after it has commenced to produce a geothermal resource, unless drilling operations are resumed before the end of the 30-day period. For the purpose of filing well records, the time limit of 60 days begins either when; the well commences production or injection, the drilling operations are suspended for more than 30 days, or the well is abandoned.

9.12 Well Tests.

The Chairman shall require such well tests or remedial work as in his judgment are necessary to prevent and minimize damage to life, health, property, natural resources, geothermal resources, ground water resources, and the environment. Types of tests shall include casing tests, cementing tests, and equipment tests.

RULE NO. 10 WELL MODIFICATION FOR INJECTION

10.1 Injection Wells

Injection wells are those wells used for disposal of geothermal waste fluids, for the augmentation of geothermal reservoir fluids, for maintenance of reservoir pressures, or for any other purpose authorized by the Chairman. New wells may be drilled or old wells may be modified for such injection purposes.

10.2 Notices of Intent Required.

Prior to modification of existing wells for injection purposes, a Notice of Intent to Deepen, Redrill, Plug or Alter Casing must be filed with the Chairman together with filing fees and bonds, as required in Rule 9.1. Modification work shall not commence until a permit has been issued by the Chairman.

10.3 Surveillance of Injection Wells.

Surveillance of injection wells shall be necessary on a continuing basis in order to establish that all injection effluent is confined to the intended zone of injection. When an owner or operator proposes to drill a new well or modify an existing well he shall be required to demonstrate to the Chairman or his designated representative that the casing has complete integrity by approved test methods.

To establish the integrity of the annular cement above the shoe of the casing, the owner or operator shall make sufficient surveys, within 30 days after injection is started into a well, to demonstrate that all the injected fluid is confined to the intended zone of injection. Thereafter, such surveys shall be made at least every two years, or more often if ordered by the Chairman. All such surveys shall be witnessed by the Chairman or his designated representative.

After the injection well has been put into service, the Chairman or his designated representative shall visit the well site periodically. At these times, surface conditions shall be noted and if any unsatisfactory conditions exist, the owner or operator shall be notified of needed remedial work. If this required work is not performed within 90 days, the permit issued for such well by the Chairman shall be rescinded. If it is determined that damage is occurring at a rapid rate, the Chairman may order that the repair work be done immediately.

Injection pressures shall be recorded and compared with the pressure reported on the appropriate forms. Any discrepancies shall be rectified immediately by the operator. A graph of pressures and rates versus time shall be maintained by the operator. Reasons for anomalies shall be promptly ascertained. If these reasons are such that it appears damage is being done, the permit issued by the Chairman may be rescinded, and injection shall cease.

period of one year or longer.

At the discretion of the Chairman, when an injection well has been left idle for a significant length of time, the owner or operator shall be informed by letter that the permit issued for use of the well for injection purposes has been rescinded. In the event the operator intends again to use the well for injection purposes, he shall be required to file an appropriate Notice of proposing to demonstrate by means of surveys that the injected fluids will be confined to the intended zone of injection.

RULE NO. 11 WELL MAINTENANCE

All producing wells and appurtenances such as well head, separators, pumps, mufflers, manifolds, valves and pipelines shall be maintained in good working condition in order to prevent loss of or damage to life, health, property, natural resources, and environment. Periodic corrosion surveillance may be conducted by the Chairman or his designated representative.

RULE NO. 12
WELL ABANDONMENT

12.1 Notice of Intent Required.

The owner or operator of a well proposed to be abandoned must file with the Chairman a Notice of Intent to Abandon, prior to any such work on the well. The operator's proposed plans for abandonment shall be subject to approval prior to the issuance of a permit by the Chairman.

12.2 General Requirements.

a. The owner or operator shall promptly plug and abandon any well that is not in use or demonstrated^{not} to be potentially useful. No well shall be abandoned until its lack of capacity^A for further profitable production of geothermal resources has been demonstrated to the satisfaction of the Chairman. No well shall be plugged and abandoned until the manner and method of plugging have been approved or prescribed by the Chairman.

b. Prior to commencing abandonment operations, the Chairman shall be notified of all such operations.

c. Cement used to plug any well, except that cement or concrete used for surface plugging, shall be placed in the hole by pumping through drill pipe or tubing. Such cement shall contain a high temperature resistant admix, unless this requirement is waived by the Chairman in accordance with the particular circumstances existing in that well or area.

d. Good quality, heavy drilling fluid approved by the supervisor shall be used to replace any water in the hole and to fill all portions of the hole not plugged with cement.

e. All open annuli shall be filled solid with cement to the surface.

f. Subsequent to plugging and abandonment operations in the hole, casings shall be cut off at least 6 feet below the surface of the ~~go~~und, all concrete cellars and other structures shall be removed, and the surface location restored, as near as practicable, to original conditions.

g. A History of Geothermal Resources Well shall be filed within 60 days after completion of abandonment; except in the case of a prospect well such report shall be filed within six months after abandonment.

h. Any bond or rider thereto covering the well shall remain in full force and effect until the well is properly abandoned and the surface properly restored. Written approval of the abandonment must be obtained from the Chairman before release of any bonds will be recommended.

including lithology and depth of formation, and for water-bearing and geothermal heat-bearing strata and their depths, pressure, and temperatures; and such other well surveys and logs of temperature, chemical, radioactivity, and electrical characteristics of the well.

12.3 Cementing Requirements.

- a. If useable (as determined by the Chairman) basal ground water resources exist, a minimum of 100 lineal feet of cement shall be placed straddling the interface or transition zone between the overlying fresh water and underlying salt water in the open hole or behind casing, as the case may be.
- b. One hundred (100) lineal feet of cement shall be placed straddling the bottom of the conductor pipe and the shoe of all casings.
- c. Cement shall be placed solidly across geothermal zones and extending 100 lineal feet above and below such zones, whether in uncased or cased (perforated) hole.
- d. Fifty (50) lineal feet of cement shall be placed above the top of casing liners.
- e. One hundred (100) lineal feet of cement shall be placed straddling casing stubs and laps. If unable to enter casing stubs or laps, 100 lineal feet of cement shall be placed above the top of the stubs or laps.
- f. If casing is collapsed, etc., cement shall be placed solidly in geothermal zones or perforated sections of casing and extending 100 lineal feet above such zone or perforated section by squeezing with a retainer or braden head.
- g. A surface plug consisting of a minimum of 50 lineal feet of neat cement or ready mix concrete shall be placed below the surface of the well.

12.4 Deserted Wells.

The Chairman may order the abandonment of any well that has been deserted whether or not any damage is occurring or is threatened. Removal of drilling rig is prima facie evidence of desertion after the elapse of six months unless a request for an extension of time for not more than an additional six months is filed with the Chairman. For good cause shown, the Chairman may extend such additional period.

RULE NO. 13 WELL RECORDS AND REPORTS

13.1 General.

Well Record
gathered
or by the agent
Thompson
The owner or operator of any well shall keep, or cause to be kept, a careful and accurate log, core record, and history of the drilling of the well. *These* The log shall be kept in the local office of the owner or operator and together with all other reports of the owner or operator, shall be subject, during business hours, to the inspection of the Chairman or his designated representative. *(see book of page)*

where a well has been drilled with air, a bridge plug may be placed at the deepest cemented casing shoe and the bridge plug shall be capped with a minimum of 200 lineal feet of cement.

Report
13.2 Records to be Filed.

Within ³⁰~~60~~ days after the completion of any well, the owner or operator shall file with the Chairman the following well records:

a. Drilling Log and Core Record. The drilling log shall show the lithologic characteristics and depths of formations encountered, the depths and temperatures of ground water-bearing and geothermal resources-bearing strata, the temperatures, chemical compositions, and other chemical and physical characteristics of fluids encountered from time to time, so far as ascertained. The core record shall show the depth, lithologic character and fluid content of cores obtained, so far as determined.

b. Well History. The well history shall describe in detail the chronological order on a daily basis all significant operations carried out and equipment used ^{Report} during all phases of drilling, testing, completion, recompletion and abandonment of the well.

c. Well Summary. The well summary report shall show data pertinent to the condition of the well at the time of completion of work done. Well locations shown on this form shall be surveyed by a licensed surveyor.

d. Electric logs, directional surveys, physical or chemical logs, salinity logs, water analyses, and temperature surveys, if performed.

Supplementary Notice. Reports on any other operations which affect the previous reported activities of a well should be reported on
13.3 Annual Reports to be Filed.

Monthly
The owner or operator of any well which is producing geothermal resources or by-products or is being used for injection purposes shall file with the Chairman on or before the 30th day after the end of each calendar year, ^{Production and Injection} an annual report on the amount of geothermal resources produced or the amount of fluid injected for each month of the calendar year ended.

13.4 Confidentiality of Records and Reports.

Except as provided elsewhere in these regulations for wells on State and reserved lands, the well records and reports of all wells required to be filed shall be held confidential by the Department except for the following information: (1) well owner or operator's name, (2) well number, (3) elevation of well, and (4) location of well.

Such well records and reports required to be filed with the Chairman shall be open for inspection only to the Board, the Chairman, and designated State officials; and only to other persons who are authorized in writing by the owner or operator.

The records and reports for a completed or producing well that has been transferred by sale, lease, or otherwise shall be made available to the new owner or lessee, for inspection or copying and shall be made available for inspection or copying by others authorized in writing by such new owner or lessee.

13.5 Records and Reports as Evidence.

Records and reports required to be filed shall in no case be available as evidence in court proceedings. No officer or employee or member of the Board shall be allowed to give testimony as to the contents of such records except as necessary for the review of a decision of the Chairman or the Board, or in any proceeding initiated for the enforcement of an order of the administrator, or in criminal proceedings arising out of such records or the statements upon which they are based.

RULE NO. 14 ENVIRONMENTAL PROTECTION

a. Protection of the environment includes responsibility of the owner or operator of any well to: conduct exploration and development operations in a manner that will provide maximum protection of the environment; rehabilitate disturbed lands; take all necessary precautions to protect the public health and safety; and conduct operations in accordance with the spirit and objectives of all applicable environmental legislation.

b. Adverse environmental impacts from geothermal-related activity shall be prevented or mitigated through enforcement of applicable Federal, State, and local standards, and the application of existing technology. Inability to meet these environmental standards or continued violation of environmental standards by any well owner or operator after due notification, may be construed as grounds for the Chairman to order a suspension of well operations.

c. The owner or operator of a well shall be responsible for monitoring of readily identifiable localized environmental impacts associated with specific activities that are under his control. Monitoring of environmental impacts may be conducted by the use of aerial surveys, inspections, periodic samplings, continuous records, or by such other means or methods as required by the Chairman. Due to the differing natural environmental conditions among geothermal areas, the extent and frequency of such monitoring activities will be approved by the Chairman on an individual well basis. In the event the Chairman determines that the degree and adequacy of existing environmental protection regulations in certain areas are insufficient, the Chairman may establish additional and more stringent requirements.

The owner or operator of a well shall provide for acquisition of environmental baseline data for a period of one year prior to submission of a plan for production. Techniques and standards to be used by the owner or operator for meeting these requirements shall be subject to the approval of the Chairman.

d. Aesthetics. The owner or operator of a well shall reduce visual impact, where feasible, by the careful selection of sites for operations and facilities. The design and construction of facilities shall be conducted in a manner such that the facilities will blend into the natural environmental setting of the area by the appropriate use of landscaping, vegetation, compatible color schemes, and minimum profiles. Native plants or other compatible vegetation shall be used, where possible, for landscaping and revegetation.

e. Land Use and Reclamation. Drilling and operating plans shall be designed so that such operations will result in the least disturbance of land, water, and vegetation. Existing roads shall be used where feasible. Entry upon certain environmentally fragile land areas may be either seasonally restricted or restricted to special vehicles or transportation methods which will minimize disturbance to the surface or other resources as specified by the Chairman.

Plans for drilling operations shall provide for the reclamation and revegetation of all disturbed lands in a manner approved by the Chairman. Land reclamation may include preparation and seeding with prescribed wildlife food and plant cover or improved and acceptable substitutes thereof which will equal or enhance the food values for indigenous wildlife species and domesticated animals. Temporary fencing for such reclaimed areas may be required to facilitate restoration thereof.

f. Slope Stability and Erosion Control. Operations shall be conducted in such a manner so as to minimize erosion and disturbance to natural drainage. The owner or operator of a well shall provide adequate erosion and drainage control to prevent sediments from disturbed sites from entering water courses for soil and natural resource conservation protection.

g. Biota. The owner or operator of a well shall conduct all operations in such a manner as to afford reasonable protection of fish, wildlife, and natural habitat. He shall take such measures as are necessary for the conservation of endangered and threatened species of flora and fauna as set forth by applicable legislation.

h. Cultural Resources Preservation. The owner or operator of a well shall exercise due diligence in the conduct of his operations to protect and preserve significant archaeological, historical, cultural, paleontological, and unique geologic sites.

Previously unknown sites discovered during any operations shall be immediately reported to the Chairman, and operations on that site shall cease until said site can be assessed for its archaeological value.

i. Pollution; Waste Disposal. The owner or operator of a well shall comply with all applicable Federal, State, and local standards with respect to air, land, water, and noise pollution, and the disposal of liquid, solid, and gaseous wastes. Immediate corrective action shall be taken in all cases where pollution has occurred.

j. The owner or operator of a well shall design, plan, and conduct all well drilling, casing and cementing operations in such a manner as provide for protection of all useable ground water resources from exhaustion, depletion, waste, pollution, salt water encroachment or the threat thereof.

PART III - OTHER PROVISIONS

RULE NO. 15
APPEAL

[As provided in Chapter 178 of the Hawaii Revised Statutes,] any person adversely affected thereby may appeal to the circuit court from any ruling of the Board regulating the flow, manner of sealing, or manner of repairing of any well by filing, in writing, a notice of appeal within ten days after the date of the ruling with the clerk of the court and serving a copy thereof upon the Board stating the grounds therefor. The court shall have power to review and to affirm, modify, or reverse any decision or order of the Board so appealed from, in any matter of law or fact.

RULE NO. 16
PENALTIES

[As provided in Chapter 178 of the Hawaii Revised Statutes,] any person violating these regulations shall be fined not more than \$100; and where continuance of waste, as defined in Chapter 178, is under immediate control, ^{table} each day's continuance of the same, after written notice shall constitute a separate offense; provided, that when the continuance of the waste is not under immediate control, as where recasing or sealing is necessary, each day's continuance of the same shall constitute a separate offense after sixty days have elapsed from the time of receiving written notice to prevent waste. For violations under ^{Rule 13} Sections 178-5 and 178-6 of Chapter 178, HRS, each day's continuance of the same shall constitute a separate offense after 30 days have elapsed from the time of written notice of violations.

RULE NO. 17
INJUNCTIONS

[As provided in Chapter 177 of the Hawaii Revised Statutes,] if it appears to the Board that any person has engaged or is about to engage in any act or practice constituting a violation of that chapter or any rule, regulation, or order of the Board, the Board may bring an action in the appropriate circuit court to enjoin any such acts or practices and to enforce compliance with this chapter or any rule, regulation, or order. Upon a proper showing, the court shall grant a restraining order, temporary or permanent injunction, or other appropriate relief. The Board shall not be required to post a bond.

RULE NO. 18
AMENDMENTS

These rules may be amended or repealed at any time by action of the Board, in accordance with Chapter 91 of the Hawaii Revised Statutes; provided, however, that any amendment to these rules changing the rental or royalty due the State of Hawaii or the term of leases shall not adversely affect leases outstanding upon the effective date of the amendment.

The Board of Land and Natural Resources on _____, 19____,
approved and adopted these rules and regulations.

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

Approved this _____ day
of _____, 19____

Governor of Hawaii

Approved as to form:

Deputy Attorney General

Dated: _____

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STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

Approved this _____ day
of _____, 19____

Governor of Hawaii

Approved as to form:

Deputy Attorney General

Dated: _____

*OK -
please type final
2*

STATE OF HAWAII
BOARD OF LAND AND NATURAL RESOURCES
Honolulu, Hawaii

REGULATIONS
ON
LEASING OF GEOTHERMAL RESOURCES
AND
[ALL] DRILLING FOR GEOTHERMAL RESOURCES
IN HAWAII

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PART II - DRILLING FOR GEOTHERMAL RESOURCES

REGUATIONS
ON
LEASING OF GEOTHERMAL RESOURCES
ad
AND
ALL DRILLING FOR GEOTHERMAL RESOURCES
IN HAWAII

PART i - LEASING OF GEOTHERMAL RESOURCES

RULE NO. 1

GENERAL

1.1 Purpose.

The purpose of these regulations is to provide for the leasing of State and reserved lands for the purpose of geothermal resources exploration, development and production and to provide for the regulation of all drilling for geothermal resources in Hawaii in order to prevent waste and damage to geothermal resources, to prevent damage to other natural resources, to prevent degradation of water resources, to protect the environment, and to prevent injury to life and property.

1.2 Authority.

These rules ~~and~~ promulgated pursuant to the jurisdiction and authority of the Board of Land and Natural Resources provided in Chapters 182, 178, and 177 of and 177 of the Hawaii Revised Statutes.

1.3 Incorporation by Reference.

Any document of part therein incorporated by reference herein is a part of these regulations as though set out in full.

1.4 Revision.

These regulations may be revised or repealed at any time by the Board in accordance with provisions of Chapters 91 and 182 of the Hawaii Revised Statutes. However, any revision to these regulations changing the rental or royalty due the State of Hawaii or changing the term of mining leases shall not adversely affect valid leases existing on the effective date of the revision.

1.5 Legal Conflicts.

Nothing in these regulations shall be construed as superseding Chapters 91, 182, 178, 177, 183-41, and 205 of the Hawaii Revised Statutes, as amended.

1.6 Definitions.

For purposes of these regulations, unless otherwise indicated herein by express term or by context, the term:

"Board" means the Hawaii Board of Land and Natural Resources.

"Department" means the Hawaii Department of Land and Natural Resources.

"Chairman" means the Chairman of the Board of Land and Natural Resources.

"State lands" includes without limitation lands the surface rights to which are in the State of Hawaii and under the jurisdiction and control of the Board or under the jurisdiction and control of any other state body or agency, having been obtained from any source and by any means whatsoever.

"Reserved lands" means those lands owned or leased by any person in which the State or its predecessors in interest has reserved to itself expressly or by implication the minerals or right to mine minerals, or both.

"Occupier" means any person entitled to the possession of land under a certificate of occupation, a nine hundred and ninety-nine year home-stead lease, a right of purchase lease, a cash freehold agreement, or under a deed, grant, or patent, and any person entitled to possession under a general lease, and also means and includes the assignee of any one of the above.

"Person" means a United States citizen of legal age, or any firm, association or corporation of such citizens which is qualified to do business in the State of Hawaii, and is not in default under the laws of the State of Hawaii, relative to qualifications to do business within this State, and governmental units.

"Geothermal resources" means the natural heat of the earth, the energy, in whatever form, below the surface of the earth present in, resulting from, or created by, or which may be extracted from such natural heat, and all minerals in solution or other products.

"By-product" means (1) any mineral or minerals which are found in solution or developed in association with geothermal resources and which have a value
 has a value
 have a value not sufficient to warrant extraction and production by themselves, and (2) commercially demineralized water.

"By-product" means
 "Commercial"

"Commercial quantities" means quantities sufficient to provide a return after all variable costs of production have been met.

"Mining lease" means a lease of the right to conduct ^{geothermal} ~~mining~~ operations on State lands or reserved lands to discover, develop, produce, and utilize geothermal resources therein. Unless the context indicates otherwise "lease" or "geothermal lease" means "mining lease".

"Mining Lessee" means the person as defined herein to whom a mining lease has been granted and its successor in interest or assignee. It also means any agent of the mining or an operator holding authority by or through the mining lessee. Unless the context indicates otherwise "Lessee" means "mining lessee".

"Operator" means the person as defined herein having control or management of mining operations on the leased lands or a portion thereof. The operator may be the lessee, designated operator, or agent of the lessee or holder of rights under an approved operating agreement.

"Unit agreement" means an agreement or plan of development and operation for the production and utilization of separately owned interests in the geothermal resources made subject thereto as a single consolidated unit without regard to separate ownerships and which provides for the allocation of costs and benefits on a basis defined in the agreement or plan.

2.1 Exploration Permit Required.

Rule 2 is not applicable to exploration activities conducted pursuant to a mining lease.

2.2 Application for Exploration Permits

Any person may apply for an exploration permit by submitting a written application to the Board containing the following:

a. The name and address of the person, association, or corporation for whom the operations will be conducted and of the person who will be in charge of the actual exploration activities;

b. a description of the type of exploration activities proposed to be undertaken;

c. a description of the lands to be explored;

d. a map or maps, available from State or Federal sources, showing the lands to be entered or disturbed;

e. the approximate dates of the commencement and termination of exploration activities.

f. a surety company bond of not less than \$5,000 conditioned upon compliance with all terms and conditions of Rule 2 and the exploration permit.

2.3 Permit Filing Fee

Each application shall be accompanied by a non-refundable filing fee in the amount of \$100.

2.4 Number of Permits

There are no limitations as to the number of permits which may be applied for by any one person.

2.5 Approval of Permit Application

The Board shall either approve approve subject to terms and conditions it may at its discretion specify, or disapprove an application for a geothermal exploration permit within 60 calendar days after the date of receipt of the application. If disapproved, the Board shall, through its Chairman, explain in writing to the applicant the reasons for disapproval.

2.6 Non-Exclusive Permits

^eGeothermal exploration permits under Rule 2 allow only non-exclusive access to State lands for geothermal exploration purposes and do not provide any preference rights to a mining lease of the lands explored by such permits.

2.7 Duration of Permits.

Exploration permits shall be for a period of two years from date of issuance, but may be renewed for an additional period of time in the discretion of the Board.

2.8 Confidentiality of Exploration Results.

Upon termination of the exploration permit, the results of the exploration shall be submitted to the Chairman for the Board and kept confidential. If the person holding the permit does not apply for a mining lease of the lands explored within a period of six months from the date the results are submitted to the Chairman, then the Board in its discretion need not keep the results confidential.

2.9 Departmental Investigation.

✓ The department may conduct scheduled and unscheduled inspections and investigations of operations conducted under geothermal exploration permits.

2.10 Suspension of Permits.

The Chairman may issue an order immediately suspending operations conducted under a geothermal exploration permit if the permittee is in violation of any terms or conditions of the permit which, in the judgment of the Chairman, jeopardizes the public health, safety, and welfare.

2.11 Cancellation of Permits.

The Board may cancel an exploration permit if it finds, after notice to the permittee and allowance for an opportunity for hearing, that permit requirements are not being observed after notification to the permittee.

discover,

RULE NO. 3
GEOTHERMAL MINING LEASES

3.1 Geothermal Mining Leases.

The Board may, in accordance with these ~~rules and~~ regulations, lease the right to develop and utilize geothermal resources in State and reserved lands. Prior to the public auctioning or granting without public auction of a mining lease, the Board shall set the term and conditions of the lease.

3.2 Geothermal Resources Available for Leasing.

All State and reserved lands, at the discretion of the Board, shall be considered available for geothermal mining leases.

3.3 Qualified Applicants.

Any person as defined in these ~~rules and~~ regulations shall be qualified to lease geothermal resources in State or reserved lands or take or hold an interest therein, unless the Board first determines after notice and hearing for good cause shown that a person is disqualified from leasing or taking or holding an interest in geothermal resources in State lands or reserved lands.

3.4 Mining Leases by Public Auction.

Mining leases on State lands shall be granted only on a competitive bid basis at public auction as provided in Rule 4.

3.5 Mining Leases Without Public Auction.

Mining leases on reserved lands may be granted on a competitive bid basis at public auction or without public auction to the occupier thereof or his assignee of the rights to obtain a mining lease if approved by two-thirds of its voting members as provided in Rule 5.

over

3.6 Size of Leaseable Tract.

A geothermal mining lease shall not embrace an area of more than 5,000 acres of contiguous land; except that as provided in Section 182-
mining lease shall not embrace an area of more than 2,560 acres of contiguous land ~~area in~~
~~if that~~ ^{if that} area in which the longest dimension is six times greater than its narrowest dimension. A geothermal mining lease shall embrace an area of not less than 100 acres, unless the Board, at its discretion, deems otherwise.

3.7 Assignment of Mining Leases.

a. All applications for approval of assignments must be accompanied by a non-refundable fee of \$100.00 for each assignment.

b. Any mining lease may be assigned in whole or in part, subject to the approval of the Board, to an assignee who shall have the same qualifications as any bidder for a mining lease. The assignee shall be bound by the terms of the lease to the same extent as if the assignee were the original lessee. The approval of the assignment by the Board shall release the assignor from any liabilities or duties under the mining lease as to the portion thereof assigned except for any liability or duty which arose prior to the approval of the assignment by the Board and which remains unsatisfied or unperformed.

c. No assignment shall be effective until written approval is given. An assignment shall take effect the first day of the month following the approval of the assignment.

d. A lease may be assigned as to all or part of the acreage included therein to any person qualified to hold a State lease, provided that neither the assigned nor the retained part created by the assignment shall contain less than 100 acres. No undivided interest in a lease of less than 10% shall be created by assignment.

e. The assignor and his surety shall continue to be responsible for performance of any and all obligations under the lease until the approval of the assignment. After the approval of any assignment, the assignee and his surety shall be bound by the terms of the lease to the same extent as if the assignee were the original lessee, any conditions in the assignment to the contrary notwithstanding.

f. Where an assignment does not segregate the record title to the lease, the assignee, if the assignment so provides, may become a joint principal on the bond with the assignor. The application must also be accompanied by a consent of assignor's surety to remain bound under the bond of record, if the bond, by its terms, does not contain such consent. If a party to the assignment has previously furnished a statewide bond, no additional showing by such party is necessary as to the bond requirement.

ard
2651 g. Overriding royalty interests in geothermal leases constitute accountable acreage holdings under these regulations. If an overriding royalty interest is created which is not shown in the instrument of assignment or transfer, a statement must be filed with the Chairman describing the interest. Any such assignment will be deemed valid if accompanied by a statement over the assignee's signature that the assignee is a person as defined in these rules and that his interests in geothermal leases do not exceed the acreage limitations provided in these rules. All assignments of overriding royalty interests without a working interest and otherwise not contemplated by Rule 3.7 must be filed for record in the office of the Department in Honolulu within ninety (90) days from the date of execution. Such interests will not receive formal approval.

h. No overriding royalty on the production of geothermal resources created by an assignment contemplated by Rule 3.7 or otherwise shall exceed 5 percent nor shall an overriding royalty, when added to overriding royalties previously created, exceed 5 percent.

3.8 Revocation of Mining Leases.

A [geothermal] mining lease may be revoked by the Board if the lessee fails to pay rentals when due or if any of the terms of the lease or of these [rules and] regulations are not complied with, or if the lessee wholly ceases all mining operations without the written consent of the Board for other than reasons of force majeure or the uneconomic operation of the mining lease for a period of one year. However, the Board shall give the lessee notice of any default and the lessee shall have six months from the date of the notice to remedy the default before revocation of the lease.

3.9 Surrender of Mining Leases.

Any lessee of a geothermal mining lease, who has complied fully with all the terms, covenants, and conditions of the existing lease, may, with the consent of the Board surrender at any time and from time to time all or any part of the mining lease or the land contained therein upon payment as consideration therefor two years' rent prorated upon the portion of the lease or land surrendered and as otherwise specified in Section 182-15 of Chapter 182, HRS. A [geothermal] mining lease may also be surrendered if as a result of a final determination by a court of competent jurisdiction, the lessee is found to have acquired no rights in or to the minerals on reserved lands, nor the right to exploit the same, pursuant to the lease, and, in such event, the lessee shall be reimbursed for rentals paid to the State pursuant to the lease.

3.10 Number of Mining Leases; Leasehold Limitations.

There shall be no limit upon the number of geothermal mining leases that may be granted to any person undertaking any geothermal mining operation, as specified in Section 182-8 of Chapter 182, Hawaii Revised Statutes.

However, no person shall take, hold, own, or control at one time, whether acquired from the Board under these rules by lease or approved assignment of lease, or indirectly, a divided or undivided interest in geothermal resources in State and reserved lands in excess of 40,000 acres. In computing total holdings, ownership, or control, no person shall be charged with an interest through any association, firm or corporation unless he is the beneficial owner of 10 percent or more of the stock or other instruments of ownership or control of such association, firm, or corporation. Persons owning an overriding royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with an interest. The unitizing of acreage in one or more leases pursuant to a cooperative or unit plan of development or operation approved by the Board shall be excepted in determining an interest. Leased acreage actually producing geothermal resources and paying production royalties shall not be included in accountable interests.

3.11 Term of Mining Leases.

a. The term of all mining leases shall consist of a primary ten-year period and a ^{continuation} secondary period, which shall be determined ^{as provided herein and} at the discretion ^{prior to the bidding or granting of the lease} by the Board, except that the sum of ^{all continuation} sum of primary and ~~secondary~~ periods of such leases shall not exceed exceed 65 years from the effective date. The effective date of all leases shall be the first day of the month following the Board's approval of the lease bid or lease grant, as the case may be. All leases may be continued beyond the primary period, without reopening ^{reopening or renegotiating} any terms or conditions of the lease, as provided herein Rule 3.11.

b. If during the primary period of a mining lease, geothermal resources are ~~being produced~~

being produced or utilized in commercial quantities, that lease shall continue for so long thereafter as ^{geothermal} ~~geothermal~~ resources are produced or utilized in commercial quantities. Production or utilization of geothermal resources in commercial quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal resources for delivery to or utilization by a facility or facilities not yet installed, but ~~sh~~ scheduled for ~~install~~ installation.

c. If, at the end of the primary term of a mining lease, geothermal resources are not being produced or demonstrably capable of being produced from the leased land, but the lessee is actively engaged in drilling operations below the depth of 1,000 feet or at a lesser depth of productive zone in a diligent manner, that lease may be continued, at the discretion of the Board, for a period ~~to~~

of five years and for as long thereafter as geothermal resources are being produced or ~~or~~ utilized in commercial quantities.

d. If the leased land is capable of producing geothermal resources in commercial quantities, but production is voluntarily shut-in, the lease shall continue in force upon payment of rentals for the ~~duration~~ ^{period} of the primary period or five (5) years after shut-in, whichever is longer. If the Board determines that the lessee is proceeding diligently to acquire a contract to sell or to utilize the production or is progressing with ~~installations~~ ^{installations} needed for production, the lease shall continue in force for an additional five (5) years, upon payment of rentals, otherwise the lease may be terminated by the Board. The Chairman shall continue to review shut-in ~~leases~~

leases every five (5) years until production in commercial quantities occurs or the lease is terminated by the Board for lessee's lack of due diligence or surrendered by the lessee.

continued

e. A lease that has been ~~extended~~ *continued* by reason of production or utilization of geothermal resources and which has been determined by the Chairman to be incapable of further commercial production and utilization, may be further ~~extended~~ *continued* for five (5) years if one or more valuable by-products are produced in commercial quantities. The Board may ~~extend~~ *continue* the lease for one or more additional five (5) year terms upon such terms and conditions as the Board deems fit to allow continued production of one or more valuable by-products in commercial quantities.

3.12 Rentals.

a. Lessee shall pay to the State of Hawaii in advance each year the annual rental bid for each acre or fraction thereof under lease. The annual rental for the first year of the lease shall be due and payable and shall be received in the offices of the Department in Honolulu within two days after the acceptance of the bid by the Board and the \$500 bid deposit shall be credited against such sum. Second year and subsequent rental payments must be received in the office of the Department in Honolulu on or before the anniversary date of the lease.

b. Annual rentals for each acre or fraction thereof under lease shall be at the price bid at public auction. The annual rental due each year shall be deducted from production royalties due and accrued during that same year, if there be any. The annual rental due a given year shall not be deducted from production royalties due in future years.

3.13 Royalties on Geothermal Production.

a. The rate of the royalty to be paid to the State of Hawaii for the production of geothermal resources shall be determined by the Board prior to the bidding or granting of a mining lease, but the rate shall not be less than 10 percent nor more than 15 percent of the production value of the geothermal resources produced under the lease and sold or utilized by the lessee.

b. The production value of geothermal resources produced shall be determined by the gross sale ^{price} ~~paid~~ by a power plant or other legal purchasers for value. In the event that geothermal production hereunder is not sold but is furnished to a plant owned or controlled by the lessee, the gross sale price of such production for purposes of computing royalties shall be that which is reasonably equal to the price being paid to other geothermal producers for geothermal production of like quality and quantity. Should th

Should the Board believe that any charges imposed and deducted are excessive or that the price received by the lessee is unreasonable, the lessee shall upon thirty (30) days notice, provide the Board with evidence that the charges or price or both comply with the above requirements.

c. The rate of royalty to be paid to the State of Hawaii for production of any geothermal by-products shall be 5 percent of the amount or value of any such by-product produced under the lease and sold, exchanged or otherwise disposed of by the lessee, including commercially demineralized water, except that no payment of a royalty will be required on such water if it is used in plant operation for cooling, or in the generation of electric energy ~~for otherwise~~. No royalty shall be paid for associated by-products used or consumed by lessee in his production operations.

d. The lessee shall make payment of royalties to the Board in Honolulu within thirty days after the end of each calendar month and accompany such payment with a true and correct written statement by the lessee, showing the volumes of each geothermal resource sold, used, or otherwise disposed of, and lessee shall furnish such other data as may be necessary to enable the Board to audit and verify all royalties due and payable to the State of Hawaii.

e. Metering equipment shall be maintained and operated by lessee in such a manner as to meet acceptable standards of accuracy consistent with geothermal industry practices. Use of such equipment shall be discontinued at any time upon determination by the Chairman that standards of accuracy or quality are not being maintained and, if found defective, the Chairman will determine the quantity and quality of production from the best evidence available.

f. The lessee shall periodically furnish the Chairman the results of periodic tests showing the content of by-products in the produced geothermal resources. Such tests shall be taken as specified by the Chairman and by the method of testing approved by him, except that tests not consistent with industry practice shall be conducted at the expense of the State of Hawaii.

3.14 Commingling.

Lessee shall

shall have the right, at its election prior to sale, to commingle geothermal resources produced from the leased land with that produced from other leases held by him or by other lessees, but lessee shall not do so without the Board's approval. However, before there shall be such a commingling of geothermal production the lessee shall determine the quantities and value of such production upon which royalties are due under the lease and agrees that in making such determinations, all measurements and samples shall be made and taken in accordance with good geothermal industry practices.

3.15 Unit or Cooperative Plans

a. For the purpose of more properly conserving the natural resources of any geothermal pool, field or like area, lessees under leases issued by the Board are authorized, with the written consent of the Board, to commit the State lands to unit, cooperative or other plans of development or operation with other State lands, Federal lands, or privately-owned lands. Applications to unitize shall be filed with the Chairman who shall certify whether such plan is necessary or advisable in the public interest. He may require whatever documents or data he deems necessary. To implement such unitization, the Board may with the consent of its lessees modify and change any and all terms of leases issued by it which are committed to such unit, cooperative or other plans of development or operations.

b. The ^{unit} agreement shall describe the separate tracts comprising the unit, disclose the apportionment of the production or royalties and costs to the several parties, and the name of the operator, and shall contain adequate provisions for the protection of the interests of all parties, including the State of Hawaii. The ^{unit} agreement should be signed by or in behalf of all interested necessary parties ^{unit} before being submitted to the Chairman. It will be effective only after approval by the Chairman. The unit operator must be a person as defined by these rules and he must be approved by the Chairman.

c. The owners of any right, title or interest in the geothermal resources to be developed or operated under an agreement can be regarded as proper parties to a proposed agreement. All such owners must be invited to join as parties to the agreement. If any owner fails or refuses to join the agreement, the proponent of the agreement should declare this to the Chairman and should submit evidence of efforts made to obtain joinder of such owner and the reasons for nonjoinder.

d. In lieu of separate bonds required for each lease committed to a unit agreement, the unit operator may furnish and maintain a collective corporate surety bond or a personal bond conditioned upon faithful performance of the duties and obligations of the agreement and the terms of the leases subject thereto and these rules. Personal bonds shall be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bond and by a proper conveyance to the *Board* Chairman with full authority to sell such securities in case of default in the performance of the obligations assumed. The liability under the bond shall be for such amount as the Chairman shall determine to be adequate to protect the interests of the State of Hawaii. Additional bond coverage may be required whenever deemed necessary by the Chairman. In case of changes of unit operator, a new bond must be filed or a consent of surety to the change in principal under the existing bond must be furnished.

e. Any modification of an approved agreement will require approval of the Chairman under procedures similar to those cited in paragraph "a" of this rule.

f. The term of all leases included in any cooperative or unit plan of development or operation shall be *continued* extended automatically for the term of such unit or cooperative agreement, but in no event beyond that time provided in Rule 3.11. Rentals or royalties on leases so extended shall be at the rate specified in the lease.

g. Any lease which shall be eliminated from any such cooperative or unit plan of development or operation, or any lease which shall be in effect at the termination of any such cooperative or unit plan of development or operation, unless relinquished, shall continue in effect for the term of the lease or for one year after its elimination from the plan or agreement or the termination thereof, whichever is longer, and so long thereafter as lessee engages in diligent and continuous drilling as provided in Rule 7.8, or so long thereafter as geothermal resources are produced in paying quantities, but in no event beyond the time provided in Rule 3.11a.

h. Before issuance of a lease for lands within an approved unit agreement, the lease applicant or successful bidder will be required to file evidence that he has entered into an agreement with the unit operator for the development and operation of the lands in a lease if issued to him under and pursuant to the terms and provisions of the approved unit agreement, or a statement giving satisfactory reasons for the failure to enter into such agreement. If such statement is acceptable, he will be permitted to operate independently, but will be required to perform his operations in a manner which the *Board* Chairman ~~man~~ deems to be consistent with the unit operations.

3.16 Bond Requirements.

Every lessee of a mining lease and every assignee thereof shall file with the Board, a bond, in a form and amount approved by the Board and made payable to the State of Hawaii, conditioned upon faithful performance of all requirements of Chapter 182, Hawaii Revised Statutes, and of the mining lease, and also conditioned upon full payment by the lessee of all damages suffered by the occupiers, in the case of reserved lands.

of these regulations,

*for geothermal discovery,
evaluation & production.*

3.17 Liability Insurance.

Prior to entry upon the leased lands, lessee shall cause to be secured and to be thereafter maintained in force during the term of the lease, public liability and property damage insurance and products liability insurance in the amounts to be determined by the Board in the lease for damages to property and products damaged caused by any occupancy, use, operations or any other activity on leased lands carried on by lessee, its agents or contractors in connection therewith. ^{*Liability coverage for*} Explosion, collapse and underground hazards are to be included prior to initiation of operations to drill a well ^{*to*} 1,000 feet or deeper. Lessee shall evidence such additional coverage to the Chairman prior to initiation of drilling operations. If the land surface and improvements thereon covered by the lease have been sold or leased by the State of Hawaii, the owner or lessee of surface rights and improvements shall be named insured. The State of Hawaii shall be a named insured in all instances. This policy or policies of liability insurance shall contain the following special endorsement:

"The State of Hawaii, the Hawaii State Board of Land and Natural Resources, the Chairman of the Board of Land and Natural Resources, the Department of Land and Natural Resources, and (herein insert name of owner or lessee of surface rights, if applicable) and the officers, employees and agents of each and every of the foregoing (hereinafter referred to as "additional insureds") are additional insureds under the terms of this policy, provided, however, the additional insureds shall not be insured hereunder for any primary negligency or misconduct on their part, but additional insureds shall be insured hereunder for secondary negligence or misconduct, which shall be limited to the failure to discover and cause to be corrected the negligence or misconduct of lessee, its agents or contractors. This insurance policy will not be cancelled without thirty (30) days prior written notice to the Board. None of the foregoing

foregoing additional insureds is liable for the payment of premiums or assessments on this policy."

No cancellation provision in any insurance policy shall be in derogation of the continuous duty of lessee to furnish insurance during the term of this contract. Said policy or policies shall be underwritten to the satisfaction of the Chairman. A signed ^{*and*} complete certificate of insurance, with the endorsement required by this paragraph, shall be submitted to the Chairman prior to entry upon the leased land. At least thirty (30) days prior to the expiration of any such policy, a signed ^{*and*} complete certificate of insurance, with the endorsement required by this paragraph, showing that such insurance coverage has been renewed or extended, shall be filed with the Chairman.

3.18 Hold Harmless.

Lessee shall expressly agree that the State of Hawaii, the Board, the Chairman, the Department, and the owner of the surface rights and improvements, if not the State of Hawaii, or State lessee of surface rights, if there be one, the officers, agents and employees of each and every one of the foregoing, shall be free from any and all liabilities and claims for damages and/or suits for or by reason of death or injury to any person or damage to property of any kind whatsoever, whether the person or property of lessee, its agents or employees, or third persons, from any cause or causes whatsoever caused by any occupancy, use, operation or any other activity on leased lands carried on by lessee, its agents or contractors, in connection therewith; and lessee shall covenant and agree to indemnify and to save harmless the State of Hawaii, the Board, the Chairman, the Department, owner or lessee of surface rights if there be one, and their officers, agents, and employees from all liabilities, charges, expenses (including counsel fees), and costs on account of or by reason of any such death or injury, damage, liabilities, claims, suits or losses.

3.19 Title.

The State of Hawaii does not warrant title to the leased lands or the geothermal resources and associated by-products which may be discovered thereon; the lease is issued only under such title as the State of Hawaii may have as of the effective date of the lease or thereafter acquire. If the interest owned by the State in the leased lands includes less than the entire interest in the geothermal resources and associated by-products for which royalty is payable, then the royalties provided for in the lease shall be paid to the State only in the proportion which its interest bears to said whole and undivided interest in said geothermal resources and associated by-products for which royalty is payable; provided, however, that the State is not liable for any damages sustained by the lessee.

If any claim is asserted or any action or proceeding instituted by any third party claiming title to the leased lands or any part thereof or any interest therein or in any production therefrom, adverse to the State of Hawaii or in hostility to rights claimed in good faith by Lessee under this lease, then during the pendency of such controversy and until ninety (90) days after final determination thereof, lessee may defer or discontinue all operations on the leased lands, or if it continues to operate, it may deposit royalties accruing hereunder in respect to the production therefrom in any bank in the State of Hawaii qualified as a depository of State funds to abide the final determination of such controversy. The Board shall receive earned interest with principal upon prevailing in litigation.

or the Board at its discretion may call for nominations to lease.

RULE 4 OF
PROCEDURES FOR LEASING ON STATE LANDS

4.1 Competitive Leasing

Mining leases on State lands may be granted only on a competitive bid basis at public auction. Bidding will be on the amount of annual rental to be paid for the term of the lease based on an upset price established according to Rule 3.12b.

4.2 Application to Board; Filing Fee

Any person as defined in these Rules and regulations may apply for a geothermal mining lease on lands described in Rule 3.2. The applicant shall submit three copies of a written application on forms provided by the Department and all application forms must be completed in full, signed by the applicant or his authorized representative with proof of authorization, three (3) copies of all necessary exhibits, and the filing fee. to the Board

Each application for a geothermal mining lease shall be accompanied by a nonrefundable filing fee in the amount of \$100.00.

4.3 Lease Application Exhibits

Each application for a geothermal mining lease shall be accompanied by the following exhibits:

- a. An accurate description and map of the land desired to be leased.
- b. A description of the known or potential geothermal resource desired to be leased for exploration and development.
- c. A geologist's preliminary survey report on the surface and sub-surface geology, nature and occurrence of the known or potential geothermal resources, surface water resources, and ground water resources; and an assessment of the environmental impact from geothermal resource exploration and development.
- d. Preliminary proposal of plan for geothermal exploration and development.

Information deemed proprietary by the applicant shall be kept confidential by the Board for a period of six months after any lease granted for any of the land sought for leasing. The following information may be made public by the Board:

1. Applicant's name and address
2. A description of the land nominated for leasing
3. A ^{general} description of the geothermal resources to be explored and developed

of the lease application shall

4.3 ~~4.4~~ Public Notice of Lease Application

As soon as practicable after receipt of an application, the Board shall cause a notice to be published in a newspaper of general circulation in the county where the land nominated for leasing is located at least once in each of three successive weeks, describing the land and geothermal resource nominated for leasing and the geothermal resources to be explored and developed.

4.4 ~~4.5~~ Consideration of Application
twelve

Within ~~six~~ twelve weeks from the date of the first publication of notice or such further time as may be reasonably necessary, the Board shall decide whether or not to lease the land and if deemed appropriate may modify the area sought to be leased. Prior to making its decisions, the Board shall, when appropriate, evaluate fully the potential effect of geothermal exploration and development on the environment, fish and wildlife resources, aesthetics, population, and other resources in the area. This evaluation will consider the potential impact of possible geothermal development and utilization including the construction of power generating plants and transmission facilities which may or may not be included in a mining lease. As deemed appropriate, the Board shall consider the views and recommendations of other governmental agencies, organizations, industries and lease applicants and shall consider all other potential factors, such as use of the land and its natural resources, the need for geothermal energy development and socio-economic conditions consistent with multiple-use management principles. The Board's decision whether or not to lease and selection of the area to be offered for lease shall be made after due notice of public hearing to all parties in interest.

4.5 ~~4.6~~ Rejection of Lease Application

If the Board determines that the existing or reasonably foreseeable future use of the land being sought for lease would be of greater benefit to the State than the proposed mining use of the land, it shall disapprove the application for a mining lease of the land without putting the land to auction.

4.6 ~~4.7~~ Approval of Lease Application

If the Board determines that the proposed mining use of the land would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land, the Board shall determine the area to be offered for lease and determine any special terms and conditions to be included in the lease to protect the environment, to permit use of the land for other purposes, and to protect other natural resources.

4.7 ~~4.8~~ Public Notice of Lease Sale

When the Board has approved a mining lease to be offered for sale by competitive bidding at public auction, it shall cause a notice to be published in a newspaper of general circulation in the State and in the county where the land is located at least once in each of three successive weeks, setting forth the description of the land, the geothermal rights to be leased, and the terms and conditions of the lease sale including upset rental rate and royalties. The notice will also indicate that the proposed plan of operation as required by Rule 7.2 must be filed before the lease can be issued.

4.8 ~~4.9~~ Qualification of Bidders

On or before twenty (20) days prior to the public auction, all bidders shall satisfy the Board of their financial ability to conduct diligent geothermal explorations and drill for and develop geothermal resources.

4.9 ~~4.10~~ Bidding Requirements

On or before twenty (20) days prior to the public auction, each bidder shall ^{deposit with} ~~submit to~~ the Board ^{an} ~~a~~ application for a geothermal mining lease, the filing fee required by Rule 4.2, and deposit with the Board a certified or cashier's check in the amount of \$500. ^{The deposit} ~~The Board shall~~ refund to unsuccessful bidders ^{prospective} ~~such amount~~ within two days after the public auction, but the deposit shall be forfeited by prospective bidders who fail to bid.

4.10 ~~4.11~~ Award of Lease

The lease offered for bid shall be awarded to the highest qualified bidder. The right to reject any and all bids is reserved to the Board. If the Board fails to accept the highest bid for the lease within 30 days after the date of the public auction all bids for that lease will be considered rejected. Deposits on rejected bids shall be returned. Deposits on rejected bids shall be returned. Within two days after the acceptance by the Board of the highest bid, the successful bidder shall pay to the Board the amount of the first year's rental bid and the \$500 deposit shall be credited against such sum.

Three copies of the lease will be sent to the successful bidder who shall within 30 days from delivery thereof be required to execute them, to file the required bond or bonds, and to submit the proposed plan of operation as required by Rule 7.2. When the three copies of the lease are executed by the successful bidder and returned to the Chairman, the lease will be executed by the authorized officers of the Board and a copy will be mailed to the lessee. If the successful bidder fails to execute the lease or otherwise comply with the applicable regulations, his deposit will be forfeited. In this event the land will be reoffered when it is determined, in the opinion of the Board, that sufficient interest exists to justify a competitive lease sale.

RULE 6
SURFACE RIGHTS AND OBLIGATIONS

6.1 Compensation to Occupiers.

a. The occupier of State or reserved lands leased by the Board shall be entitled to a reasonable rental from the mining lessee for the use of the surface for exploration and mining operations. Also, if the occupier suffers damage to his crops, his improvements, or the surface condition of the land caused by exploration and mining operations or by the failure of the mining lessee to properly restore the land after termination of operations, the occupier shall be reimbursed the full extent of the damages by the mining lessee; provided, that the occupier was not granted a mining lease without public auction as provided in Rule 5.

b. Nothing herein shall be construed to prevent the occupier from demanding and receiving rentals from the lessee of the mining lease or to

forbid and prevent the occupier and the lessee from agreeing upon the amount of damages to be paid the occupier and the terms and conditions of payment. The occupier may in writing before or within thirty days after the public ~~an~~ auction notify the Board that he elects to have the amount of damages and the amount of rentals to be paid as a result of the mining lease determined by arbitration with the successful bidder. In such

such event, the occupier shall notify the successful bidder of his election to arbitrate, and the arbitration shall proceed in accordance with Chapter 658 of the Hawaii Revised Statutes. The arbitrators in fixing the amount of damages to be paid to the occupier shall award him the amount which in their judgment shall

shall fairly compensate the occupier for the damages he may suffer to his crops or improvements or to the surface or condition of his land caused by the mining or other incidental operations, including exploratory work, and a reasonable rental for the use of the surface of the surface.

6.2 Mining Lessee's Rights.

The lessee shall be entitled to use and occupy only so much of the surface of leased lands as may be required for all purposes reasonably incident to exploration for, drilling for, production and marketing of geothermal

resources and associated by-products produced from the leased lands, including the right to construct and maintain thereon all works, buildings, plants, waterways, roads, communication lines, pipelines, reservoirs, tanks, pumping stations or other structures necessary to the full enjoyment and development thereof, consistent with a plan of operations and amendments thereto, as approved by the Chairman.

6.3 General Conditions.

a. Use of State lands under the ^{Board} jurisdiction and control of the Board are subject to the supervision of the ~~Chairman~~. Use of State lands under the control of other State agencies are subject to the supervision of the appropriate State agency consistent with these rules.

b. The Board reserves the right to lease, sell or otherwise dispose of the surface of State lands embraced within a mining lease, insofar as said surface is not necessary for use by the lessee in his exploration, development and production of the geothermal resources and associated by-products, ~~but~~ but any lease, sale, or other disposal of ~~surface~~ surface rights if made, shall be subject to the rights of the mining lessee.

c. The Chairman or his designated representative shall be permitted at all reasonable times to go in and upon the leased lands and premises, during the term of a mining lease, to inspect the operations and the products obtained from the leased lands and to post any notice that the Board may deem fit and proper.

d. During operations, the lessee shall regulate public access and vehicular traffic to protect human life, wildlife, livestock and property from hazards associated with the operations. For this purpose, the lessee shall provide warnings, fencing, flagmen, barricades, well and hole coverings and other safety measures as appropriate. Restrictions on access must be approved by the Chairman as part of the Plan of Operations required under Rule 7.2.

production
 e. Lessee shall take all necessary steps in the exploration, development, ~~operation~~ and marketing of geothermal resources to avoid a threat to life or property or ^{pose} an unreasonable risk to subsurface, surface or atmospheric resources.

RULE 7

~~EXPLORATION AND MINING OPERATIONS~~

Geothermal MINING OPERATIONS *under the lease*

7.1 General Terms.

- a. The operator of a lease shall conduct all OPERATIONS IN operations in a manner that will conform to the best practices and engineering principles in use in the industry. Operations shall be conducted in such a manner as to protect the natural resources including without limitation, geothermal resources, and to obtain efficiently the maximum ultimate recovery of geothermal resources consistent with other uses of the land with minimal impact on the environment. Operations shall be conducted with due regard for the safety and health of employees. The operator shall promptly remove from the leased lands or store, in an orderly manner, all scraps or other materials not in use and shall notify the Chairman of all accidents within 24 hours and submit a written report within 30 days.
- b. The operator of a lease shall comply with and be subject in all respects to the conditions, limitations, penalties and provisions of the laws of the United State, the State of Hawaii and all valid ordinances of the city and counties applicable thereto.
- c. The operator of a lease shall take all reasonable precautions to prevent waste and damage to any natural resources including vegetation, forests, and fish and wildlife; injury or damage to persons, real or personal property; and degradation of the environment. The Chairman may inspect lessee's operations and issue such orders as are necessary to accomplish these purposes.
- d. The Chairman is authorized to shut down any operation which he determines are unsafe or are causing or can cause pollution of the natural environment or waste of natural resources including geothermal resources upon failure by lessee to take timely, corrective measures previously ordered by the Chairman.
- e. When required by the Chairman, the lessee shall designate a local representative empowered to receive service of civil or criminal process, and notices and orders of the Chairman issued pursuant to these rules.

Handwritten notes and signatures:
 11/10/11
 [Signature]
 [Signature]
 [Signature]

f. In all cases where exploration or mining operations are not to be conducted by the lessee but are to be conducted under authority of an approved operating agreement, assignment or other arrangement, a designation of operator shall be submitted to the Chairman prior to commencement of operations. Such a designation will be accepted as authority of the operator or his local representative to act for the lessee and to sign any papers or reports required under these rules. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the Chairman.

7.2 Plan of Operations Required.

A lessee shall not commence operations of any kind other than ^{su}capital use prior to submitting to the Chairman and obtaining his approval of a Plan of Operations. Such a plan shall include:

- a. The proposed location and elevation above sea level of derrick, proposed depth, bottom hole location, casing program, proposed well completion program and the size and shape of drilling site, excavation and grading planned, and location of existing and proposed access roads.
- b. Existing and planned access, access controls and lateral roads.
- c. Location and source of water supply and road building material.
- d. Location of camp sites, air-strips and other supporting facilities.
- e. Other areas of potential surface disturbance.
- f. The topographic features of the land and the drainage patterns.
- g. Methods for disposing of waste material.
- h. A narrative statement describing the proposed measures to be taken for protection of the environment, including, but not limited to the prevention or control of (1) fires, (2) soil erosion, (3) pollution of the surface and ground water, (4) damage to fish and wildlife or other natural resources, (5) air and noise pollution, and (6) hazards to public health and safety during lease activities.
- i. All pertinent information or data which the Chairman may require to support the Plan of Operations for the utilization of geothermal resources and the protection of the environment.

- j. Provisions for monitoring deemed necessary by the Chairman to insure compliance with these rules for the operations under the plan.
- k. The information required above for items (a) through (f) may be shown on a map or maps of 1: 24,000 scale or larger.

7.3 Amendments to Plan of Operations.

After completion of all operations authorized under any previously approved notice or plan, the lessee shall not begin to redrill, repair, deepen, plug back, shoot, or plug and abandon any well, make casing tests, alter the casing or liner, stimulate production, change the method of recovering production, or use any formation or well for brine or fluid injection until he has submitted to the Chairman in writing a new plan of operations and has received written approval from him. However, in an emergency a lessee may take action to prevent damage without receiving prior approval from the Chairman, but in such cases the lessee shall report his action to the Chairman as soon as possible.

7.4 Drilling Operations

a. Upon commencement of drilling operations, the lessee shall mark each drilling site and each completed well site in a conspicuous place with his name or the name of the operator, the lease number and the number of the well. The lessee shall take all necessary means and precautions to preserve these markings.

b. The lessee shall diligently take all necessary precautions to keep all wells under control at all times; utilize trained and competent personnel; utilize properly maintained equipment and materials; and use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area.

c. When necessary or advisable, the Chairman shall require that adequate samples be taken and tests or surveys be made using techniques consistent with industry practices, without cost to the State of Hawaii, to determine the identity and character of geologic formations; the quantity and quality of geothermal resources; pressures, temperatures, rate of heat and fluid flow; and whether or not operations are being conducted in a manner of best interest of the public.

d. Before any work is commenced to abandon any well, notice shall be given by the operator to the Chairman, which notice shall show the condition of the well and the proposed method of abandonment. Unless otherwise specified in the plan of operation, no well may be abandoned without prior approval of the Chairman. However, the operator of a lease shall promptly plug and abandon any well that is not used or deemed useful by the Board. No production well shall be abandoned until its lack of capacity for further profitable production of geothermal resources has been demonstrated to the satisfaction of the Chairman. A producible well may be abandoned only after receipt of written approval by the Chairman. Equipment shall be removed, and premises at the well site shall be restored as near as reasonably possible to its original condition immediately after plugging operations are completed on any well except as otherwise authorized by the Chairman. When drilling operations have been temporarily suspended drilling equipment shall not be removed from any well where

without taking adequate measures to close the well and protect subsurface resources. Upon failure of lessee to comply with any requirements under this rule, the Chairman is authorized to cause the work to be performed at the expense of lessee and the surety.

7.5 Waste Prevention.

a. All mining leases shall be subject to the condition that the lessee will, in conducting his exploratory development and producing operations, use all reasonable precautions to prevent waste of geothermal resources and other natural resources found or developed in the leased lands.

b. The lessee shall, subject to the right to surrender the lease, diligently drill geothermal production wells on the leased lands as are necessary to protect the Board from loss by reason of geothermal production on other properties; or in lieu thereof, with the consent of the ^{Board} Chairman shall pay a sum determined by the ^{Board} Chairman as adequate to compensate the Board for failure to drill and produce any such wells on the leased lands. The lessee shall promptly drill and produce such other wells as the Chairman determines a reasonably prudent operator would drill in order that the lease be developed and produced in accordance with good operating practices.

c. The Chairman shall determine the value of production accruing to the Board where there is loss through waste or failure to drill and produce protection wells on the lease, and the compensation due to the Board ^{Board} as reimbursement for such loss. Payment for such losses will be paid when billed.

d. Subject to lessee's right to surrender the lease, where the ^{Board} Chairman determines that production, use or conversion of geothermal resources under a geothermal lease is susceptible of producing a valuable by-product or by-products, including commercially demineralized water contained in or derived from such geothermal resources for beneficial use in accordance with applicable State water laws, the Chairman shall require substantial beneficial production or use thereof, except where he determines that:

(1) Beneficial production or use is not in the interest of conservation of natural resources;

(2) Beneficial production or use would not be economically feasible; or

(3) Beneficial production and use should not be required for other reasons satisfactory to him.

7.6 Protection of Other Resources.

a. The lessee shall remove the derrick and other equipment and facilities within sixty (60) days after lessee has ceased making use thereof in its operations.

b. All permanent operating sites where required shall be landscaped or fenced so as to screen them from public view as far as possible. Such landscaping or fencing shall be approved in advance by the state and kept in good condition.

c. All drilling and production operations shall be conducted in such manner as to eliminate as far as practicable dust, noise, vibration, or noxious odors. Operating sites shall be kept neat, clean and safe. Drilling dust shall be controlled to prevent widespread deposition of dust. Detrimental material deposited on trees and vegetation shall be removed. The determination as to what is detrimental is a state responsibility.

d. Wastes shall be discharged in accordance with all Federal, State and local requirements and prohibitions.

e. Any operations disturbing the soil surface, including road building, construction, and movement of heavy equipment in support of or relating to specific geothermal exploration or development activities shall be conducted in such manner as will not result in unreasonable damage to trees and plant cover, soil erosion, or degradation of water resources of the State.

f. Existing roads, except public roads, and bridges on or serving the area under lease shall be maintained in a condition equal to or better than that before use. New roads and bridges shall be located, constructed, and maintained in accordance with State specifications.

g. Timber damaged, destroyed, or used on the area under lease shall be compensated for at market value to the State. Borrow pit material shall not be obtained from State lands without permission and payment of market value.

h. Improvements, structures, telephone lines, trails, ditches, pipelines, water developments, fences and other property of the state or other lessees and permanent improvements and crops of surface owners, shall be protected from damage and repaired or replaced when damaged.

i. Access to drilling or production sites by the public shall be controlled by the lessee to prevent accidents or injury to persons or property.

j. Areas cleared and graded for drilling and production facility sites shall be kept to a reasonable number and size, and be subject to Board approval.

k. Lessee shall conduct its operations in a manner which will not interfere with the right of the public to use of public lands and waters.

7.7 Suspension of Operations.

In the event of any disaster or of pollution caused in any manner or resulting from operations under a lease, lessee shall suspend any drilling and production operations, except those which are corrective, or mitigative, and immediately and promptly notify the Chairman. Such drilling and production operations shall not be resumed until adequate corrective measures have been taken and authorization for resumption of operations has been made by the Chairman. The lessee shall suspend any drilling and production operations, except those which are corrective or mitigative, if the Board shall determine that there is a substantial likelihood that continued operations would endanger public health or safety or cause serious damage to property or the natural environment. Such operations shall not be resumed until the Board shall determine that adequate corrective measures are feasible and have been taken to eliminate such substantial likelihood.

7.8 Diligent Operations Required.

The lessee shall be diligent in the exploration or development of the geothermal resources on the leased lands. Failure to perform diligent operations may subject the lease to termination by the Board. Diligent operations mean exploratory or development operations on the leased lands, including without limitation geochemical surveys, heat flow measurements, core drilling, or drilling of a well for discovery, evaluation, or production of geothermal resources.

7.9 Records and Reports

a. Lessee shall at all times maintain full and accurate records of production and payments relating to lessee's operations and activities upon and in connection with said leased lands. All books and records of lessee pertaining to or necessary in determining royalty payments shall be open to inspection at all reasonable times by the authorized representatives of the Department.

b. The lessee shall furnish to the Chairman for the Board for its confidential use, copies of all physical and factual exploration results, logs and surveys which may be conducted, well test data, and other data resulting from operations under the lease. Such information shall be kept confidential for a period of one year from date of receipt, or longer in the discretion of the Board.

7.10 Surrender of Premises

Within 90 days from the expiration of the lease, the lessee shall restore the lands covered by said lease or permit to their original condition insofar as it is reasonable to do so, except for such roads, excavations, alterations or other improvements which may be designated for retention by the Board or any State agency having jurisdiction over the affected lands. Where determined necessary by the Board or such State agency, cleared sites and roadways shall be replanted with grass, shrubs or trees.

RULE 8 AMENDMENTS

regulations
These ~~rules~~ may be amended or repealed at any time by action of the Board, in accordance with Chapter 91 of the Hawaii Revised Statutes; provided, however, that any amendment to these ~~rules~~ changing the rental or royalty due the State of Hawaii or the term of leases shall not adversely affect leases outstanding upon the effective date of the amendment.

The Board of Land and Natural Resources on _____,
19____, approved and adopted these rules and regulations.

*must
be filed
as part
of the*

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

Approved this _____ day
of _____, 19____.

Governor of Hawaii

Approved as to form:

Deputy Attorney General

Dated: _____

PUBLICATION OF
NOTICE OF PUBLIC HEARING

_____ (newspaper)

RULE 5

PERMITS TO USE WATER IN DESIGNATED AREAS

Use Permit Required.5.1 General.

When a ground water area has been designated by the Board for administrative control to insure that the ground water resources therein are protected and used for the greatest benefit to the people of the State, any withdrawal of water for a beneficial use shall be made only by a permit issued by the

~~Manager~~ ^{EXCEPT} Manager-Chief Engineer ~~for the Board;~~ with the exception of withdrawals for individual household uses and preserved uses ~~described~~ described in ~~Rules 2 and 4.~~ Rules 2 and 4.

An application for a permit must first be made to the Manager-Chief Engineer as provided in Rule 5.2.

5.2 Applications for Permit.

To request permission from the Board ~~to~~ ^{ground} to withdraw ~~and use~~ water for a beneficial ^{use within a designated ground water area} purpose, a person, municipal corporation, firm, corporation, or water users' association ^{first} must file with the Manager-Chief Engineer an application for a permit to make such withdrawal and use of water. No withdrawal ~~or use~~ of water ~~being applied for~~ shall be made by the applicant until he has received a permit ^{issued by} ~~from~~ the Manager-Chief Engineer.

Each application for a permit to use water for a beneficial purpose shall be made on forms furnished by the Department and shall include; the name and address of the applicant; ~~the~~

the existing or proposed source of water supply; the nature and amount of the proposed beneficial use; the time ^{of taking} ~~during which~~ water will be required each year; the location and ^{survey} description of the proposed well ^{and related facilities} or other construction; the time for the

complete application of the water to the proposed use, and such other data, ^{plans} maps, and drawings ^{and such other information} as may be deemed necessary by the Manager-Chief Engineer ^{to be necessary} to determine the merits of the proposed water use, any hazards to public health, safety, or welfare, and the desirability of issuing ^a the permit.

quit Upon receipt of an application, ^{to use water} the date of its receipt in the office of the Manager-Chief Engineer shall be made thereon. If upon examination, the application for a permit is found to be incorrect or otherwise incomplete it shall be ~~returned to~~ returned to the applicant for correction or completion. No application shall ~~be~~ lose its priority of filing on account of such incompleteness, provided such data, maps, and drawings as deemed necessary by the Manager-Chief Engineer shall be filed within such reasonable time as the Manager-Chief Engineer shall require.

5.3 Consideration of Applications for Permit.

When an application has been properly filed, the Manager-Chief Engineer shall investigate and consider the application for the Board with the objective of determining the most beneficial use of the ground water resources of the State. The Manager-Chief Engineer shall determine what water, if any, is available for beneficial use and determine to what beneficial use or uses it can be put. If the proposed water use is for irrigation purposes, the Manager-Chief Engineer shall investigate and determine what lands are capable of irrigation by the water use being applied for.

The Manager-Chief Engineer shall ³² prepare a written findings of ~~acts~~ ^{fact} concerning the application and shall recommend to the Board that ^{issue} a permit ^{approval of Board} ~~be issued~~ if he finds: (1) that there is water available for use, (2) that the proposed use of the water will be for a beneficial purpose, (3) that the water use proposed in the application will not ~~impose~~ impair the most beneficial use of the water resources of the State, and ~~4~~ 4) that issuance of the permit will not substantially and materially interfere with existing preserved uses,

existing permitted uses, or existing individual household uses; provided, however, if the ~~use~~ use being applied for would interfere substantially and materially with any of such existing uses, the Board may issue a permit for such application on the condition that the permit holder ~~be~~ ^s furnished to the person whose uses are interfered with ~~and~~ an amount of water ~~equ~~ equal in quantity and quality to that which would be lost by reason of the interference.

^{for a permit to use water}
An application ~~may~~ ^{shall} be approved for a lesser amount of water than that ^{requested} ~~applied for~~ if there ~~is that~~ exists ~~substantial~~ reason for it, but in no event shall an application be approved for more water than can be put to beneficial use for the purposes and times stated in the application.

Ed amount of time

5.4 Public Notice of Applications for Permit.

^{28th} Affirmative findings of fact by the Manager-Chief Engineer and ^{Board's} at
 least ten days prior to the approval ^{of the Board} ^{not} for the issuance of a
 permit ^{cause to be} for such application, the Manager-Chief Engineer shall ^{require}
^{as a} ^{for permit} the applicant to publish the notice of the application, at the applicant's
 expense
 expense ~~in a form and within a time prescribed~~ in a newspaper of general
 circulation in the county which would be affected by the issuance of such
 a permit.

The Manager-Chief Engineer may also require the applicant to mail
 notices of the application to any State or local governmental agency or
 person who may be ~~deemed~~
 deemed to have an interest in the application.

Silence

5.5 Approval/Rejection of Applications for Permit.

Based upon the [Manager-Chief Engineer's written] findings of fact concerning an application for a permit, the Board shall either approve or ^{in whole or in part} reject such application ^{and the issuance of} for a permit. ^{The Board} An application may ^{the issuance of a permit} be approved for a lesser amount of water than that applied for, but in no event shall an ^{requested in an application for permit.} application be approved for ^{any amount of water at} more water than can be put to beneficial use ^{within one year from the date of issuance of the permit.} for the purposes and times dated in the application. Upon approval by the Board, the Manager-Chief Engineer shall issue ^{ALL} a permit ^{approved by the Board and issued by} upon ~~terms, condi-~~ ^{The MCE shall be} tions ^{the} terms and conditions prescribed in Rule 5.6 and such other terms and conditions as the Board ^{to carry out the intent of the Ground Water Use Act} may deem necessary. The Board shall reject any application and disapprove the issuance of a permit if it finds that such application will not provide for the most beneficial use of the ground water resources ^{occurring within} in the designated area ⁱⁿ for the best interest of the people of the State.

5.6 Term and Conditions of Permits.

0.1
a. Every permit issued by the Manager-Chief Engineer for the Board shall be issued for a specified period not exceeding 50 years. The period of each permit shall be set by the Board, depending upon the circumstances, beneficial use, and temporary or permanent nature of the water withdrawal involved.

b. Every ~~permit~~ permit issued by the Manager-Chief Engineer for the Board shall contain and be subject to the following ~~condition~~ conditions:

(1) The water use must be for the beneficial purpose described in the permit;

(2) The use authorized by the permit must not interfere substantially and materially with existing preserved uses, existing individual household uses, or existing permitted uses, ^{use} except as provided in Rule 5.3;

(3) The use is subject to the shortage ^{and} emergency powers of Board;

(4) The permit may be suspended or revoked in accordance with Rules 5.6C and 5.8;

(5) Such other conditions as the Board may deem necessary.

c. Unless specifically exempted by the Board, every permit shall ^{as a condition,} ~~conditionally~~ provide that at any time or ~~at~~ specified time after its issuance, the ^{permit holder} ~~permittee~~ may be required to relinquish his ~~permit~~ to the Board with reasonable compensation therefor. The Board may require the relinquishment of a permit if it determines:

~~no~~ (1) That there exists one or more applicants for permits to use water for purposes which would be more beneficial or as beneficial and which would provide a more complete utilization of the water being used by the ^{permit holder} ~~permittee~~;

(2) That additional permits to make such uses cannot be issued because there is no reasonably available water; and

(3) That such applicants for permits are willing and able to furnish reasonable compensation to the relinquishing ^{permit holder} permittee.

5.7 Renewal of Permits.

A permit may be renewed after one-half of its term has expired by filing an application for renewal on forms furnished by the Department. If ^{an} ~~an~~ application for renewal ^{of} ~~has been~~ filed six months prior to ^{its} ~~the~~ expiration date of a permit issued for a term of more than one year, ^{it shall be the duty of} the Manager-Chief Engineer ^{to} ~~shall~~ give written notice ^{by certified mail} to the holder of such permits to file an application for renewal ~~for~~ ^{an} before the expiration date. If ~~no~~ application for renewal has been filed ^{of such a permit} ~~within~~ 30 days ^{after receipt of} of the written notice, the Board may proceed immediately to approve the issuance of a new permit to another person to ^{make the unrenewed water use in whole or in part} ~~use the existing permitted water use~~; provided that the effective date of such new permit shall be upon the expiration of the existing permit.

^{The} Renewal of permits shall be for a term set by the Board and shall become effective upon ^{the date of} ~~issuance~~, except as ^{the Board may} ~~otherwise~~ provided.

The Board shall hold a hearing upon the request of any person adversely affected by the renewal or ^{the} ~~refusal~~ to renew a permit.

*as permit issued for a term of more than one year,
it shall be the duty of the Manager-Chief Engineer to give written notice to the holder*

5.8 Revocation of Permits.

Any permit may be revoked in whole or in part; for any material false statement in the application or in any report or statement of fact required to be filed, for any violation of these regulations, for any violation of ~~the~~ the conditions of the permit, or for non-use of the water permitted to be used.

Prior to the revocation of the permit in whole or in part, the Board shall give written notice to the permit holder of the facts which warrant such revocation and provide an opportunity to ~~an~~ ^{administrative} hearing.

RULE 6

PERMITS TO SUPPLY WATER IN DESIGNATED AREAS

Supply Permit Required
 6.1 General.

Within a designated ground water area, no person shall contract to supply or sell any rights to ^{the} ground water, to another person without a permit to supply ground water and no State or local government agency shall contract to obtain any ground water supply from any person not holding a permit to supply water.

for Supply Permit ; Approval
 6.2 Application/Permit Procedures.

The filing of an application for a permit to supply water and the issuance of a permit to supply water shall be substantially as prescribed in Rule 5; ^{copy} provided, (however) that approval of such permits shall not be withheld except ~~off~~ for good cause and that such permits shall be deemed approved by the Board if the Board does not act or commence hearings within 90 days after an application for a permit to supply water has been filed.

RULE 4

PRESERVATION OF EXISTING USES IN DESIGNATED AREAS

4.1 Existing Use Defined.

[An] existing use of water which may be preserved and continued when an area has been designated for ground water regulation and control shall mean any lawful and beneficially used withdrawal of water from the designated ground water area which:

(1) is being made on the ^{effective date of designation} 90th day prior to the date the Board designates the ground water area; ^{which is planned} (2) ^{from} to be made in conjunction with a well or wells under construction on the ^{effective date of designation by} 90th day prior to the date the Board designates the ground water area; or (3) ^{which} has been made within the five years prior to ^{The effective date of designation by} the 90th day prior to the date the Board designates the ground water area. However, ^{such} ~~an~~ existing use ^{do} does not include individual household uses which ^{are} ~~is~~ exempted from regulation in a designated ground water area ^{except for reporting of records}.

4.2 Preservation of Existing Uses.

a. After the Board has designated a ground water area for protection and regulation any existing use of water as defined in Rule 4.1 within such a designated area may be preserved and continued, provided that such existing uses remain beneficial and the user ^{declares such uses, as prescribed in} complies with Rule 4.3.

b. Unless authorized by the Board, no preserved uses may be modified by increasing the amount of withdrawal, changing the purpose or manner of use, changing the time of taking the water, or changing the point of diversion of the withdrawal. Provided, however, that any ^{or} person supplying a municipal corporation ~~to any municipal corporation~~ may increase its water withdrawal up to 100,000 gallons per day or five percent of the average daily withdrawal for the year prior to the date of public notice of designation of the ground water area.

4.3 Declaration of Existing Uses Required.

date of public notice of
 Within 90 days after the designation of ground water area, any person
 owning or making an existing use of water and desiring to preserve or con-
 tinue such use ^{must} ~~shall~~ file a certified declaration to that effect ^{with} ~~in~~ the office of
 the ~~Department's~~ Division of Water and Land Development, Room 227, 1151
 Punchbowl Street ⁱⁿ Honolulu, Hawaii, on a form ~~described and~~ furnished by
 the Department. Each such certified declaration of an existing use ^{to be}
 preserved ^{shall} contain the following information: (1) the beneficial use
 to which the existing withdrawal has been put; (2) the quantity of water that
 has been used; (3) the time ^{and date} of withdrawal of water for beneficial
 use; (4) in the case of beneficial use for irrigation, a description of the
^{irrigated} land ~~to which such water has been applied~~ and the name of the owner thereof;
~~and~~ (5) so far as it may be available, descriptive information concerning
 each well or other works for the withdrawal of water, as required in Rule 5
 for ground water use permittees in designated areas; ^{and (4) such other information as may be deemed necessary}

Dept
 Each such declaration shall be certified, either on the basis of the
 personal knowledge of the declarant or on the basis of information and belief.

for an existing use within the time allowed

If no declaration is filed ~~as required~~, the Board, in its discretion, may conclusively determine the extent of the uses preserved within a designated ground water area; ^{OK} ~~provided~~, however, the claimant may apply to the Chief Engineer for a reasonable extension of time ^{for filing} which shall not exceed an additional 90 days ^{And} in which shall be granted only upon a showing of good cause for ~~such~~ failure. ^{to file within the time allowed.}

4.4 Certification by Board.

six months
 Within ~~30~~ ³ days after receipt of a declaration properly completed and filed, the ~~Department~~ ^{Manager Chief Engineer} shall ~~acknowledge~~ ^{has been} the same by notation on one copy indicating receipt thereof and the date of receipt. And within 6 months after the date of such filing, the Board shall certify or refuse to certify the declared water use. If certification is made, the Chief Engineer shall issue a certificate which shall include ^{to be} (1) the description of the beneficial uses preserved ^{and} (2) a statement of the maximum daily and annual ^{withdrawals} drafts preserved from each well, ^{for the} and (3) a statement that ^{the} a certificate does not constitute an adjudication of property rights, if any, to the water in the designated ground water area. ^{Manager Chief Engineer} ~~provided, however, that~~ if the Board has ^{does} not acted upon a declaration within 6 months after the date of its filing, the ^{Manager Chief Engineer} Board shall certify the uses ^{uses described in that declaration.}

Manager Chief Engineer

The ~~Board~~ may refuse to certify a declaration of existing use for good cause. However, any person adversely ^{adversely affected by such refusal to certify may req} may request and receive ^{an administrative} a hearing by the Board as prescribed in Rule ____.

*OK.
fair*

Non-
4.5 Modification of Preserved Uses.

Within a designated ground water area, no preserved existing use of water may be modified by increasing the quantity of water used, by changing the purpose or manner of the beneficial use, by changing the time of taking the water, or by changing the point of diversion of the water; unless authorized by the Board. However, any municipal corporation or person supplying a municipal corporation may increase its water use from a designated ground water area by 100,000 gallons per day or 5 percent of the average ~~per-day use~~ per-day use during the year immediately prior to the date of designation of such ground water area, whichever ^{amount} amount is the greater.

4.6 Exchange of Preserved Uses.

Any person having a preserve use preserved use as ^d prescribed herein Rule 4, may voluntarily exchange his preserved use for a permit to use ground ~~water or a permit to supply ground water.~~ water or a permit to supply ground water.

*The
ground
water
preserved
by
act.*

When a person materially violates Rule 4, the Board in its discretion may enter an order that the violation constitute

voluntary relinquish

When a person materially violates Rule 4, the Board in its discretion may enter an order that the violation constitutes an offer of exchange of that person's preserved use.

4.7 Invalidation of Preserved Uses.

a. ^{ground} In a designated area, any ^{preserved} ~~existing use~~ ~~preserved under Rule 4~~ shall automatically be ^{come} ~~invalidated~~ if ~~such uses are~~ not used for four consecutive years or for any five out of seven years.

b. In computing the use ^{years} years of non-use it shall be conclusively presumed that the following ^{effective date of} are years of non-use: (1) any year of non-use during the three years prior to the ~~90th day prior to the~~ designation of the ground water ^{in which the preserved use is located} area, and (2) ^{any} the years during which a declaration was required to have been filed under Rule 4.3, but during which none was filed. Any year of non-use caused by a ^{declared} shortage of water due to natural conditions will be considered neither years of use nor non-use.

RULE 3
DESIGNATION OF GROUND WATER AREAS

3.1 Purpose.

When it can be reasonably determined that the most beneficial use of the ground water resources in an area is being threatened by existing or proposed withdrawals of water, it shall be the duty of the Board to designate such areas for the purpose of establishing administrative control over the withdrawals of ground water ⁱⁿ of such areas to ^{insure} ~~assure~~ the ^{most beneficial} optimum use, development, or management of such ground water resources in the interest of the people of the State. 9/17/71

3.2 Initiation By Board.

Manager Chief Engineer
The designation of a ground water area by the Board may be initiated by the Board ^{Manager Chief Engineer} upon ~~recommendation of the Chief Engineer~~. It shall be the duty of the ^{Manager} Chief Engineer to make such recommendation from time to time when, in his opinion, it is desirable or necessary to designate a ground water area for the purpose stated in Rule 3.1 and there is adequate factual data ^{for a decision by the Board} to indicate such desirability or necessity.

Initiation
3.3 Petition by Interested Persons.

The designation of a ground water area by the Board may also be initiated by any interested person, by ^{written} petition to the ^{Manager Chief Engineer} Board proposing ~~The~~ designation of a specific ^{ch} area and presenting the reasons therefor. It shall be the duty of the ^{Manager Chief Engineer} Manager Chief Engineer to act upon the petition by making a recommendation for or against the proposed designation to the Board within 60 days after receipt of the petition or such additional time that may be reasonably necessary to determine that a favorable sentiment for the proposed designation exists among a majority of the affected major water users or that there is sufficient factual data to warrant the proposed designation.

3.4 Notice; Public Hearing Required.

a recommendation for ground
 When ~~the~~ designation of an area has been ~~proposed to~~ *accepted by* the Board ~~upon~~
 recommendation of the Chief Engineer or by petition by any interested person, *Manager*
 the Chief Engineer shall ~~cause to be published~~ *hold a public hearing for the Board and* a notice of ~~public~~ *public* hearing setting
 forth: (1) a description of the land area proposed to be designated in terms
 of appropriate legal subdivisions and ~~of~~ *7* tax map keys; (2) the purpose of
 the public hearing, and (3) the time, date, and place of the public hearing
 where written or oral testimony may be submitted and heard. Such notice
 shall be published once each week for three successive weeks in a newspaper
 of general circulation in the appropriate County and the last publication shall
 be not less than ten days or more than ~~30~~ *thirty* days before the date set for the
 hearing. Publication of the notice of public hearing shall be considered as
 sufficient notice to all land owners and water users ~~concerned~~ *who might be affected*
 by the proposed designation.

3.5 Investigations Required.

Before any proposed ground water area is designated by the Board,
Manager the Chief Engineer shall conduct, cooperate *with the appropriate county water agency*, or administer contracts *for* conduct
 of any scientific investigations or study deemed necessary *for* by the Board *for the* ~~in to~~
 making ~~its~~ *a a* decision to designate a ground water area.

3.6 Criteria for Designation.

In designating an area for ground water ^{use} regulation, protection, and control the Board shall be guided in its decision by any or all of the following findings of fact:

a. That a majority of the major water users who would be affected are in favor of the proposed designation.

b. a. That the rate of withdrawal of ground water approximately ^{existing} equals or exceeds the estimated rate of recharge ^{of the proposed area} insofar as it can be ^{factually data and} reasonably ^{feasibly} determined from technical and scientific ~~data~~ ^{and studies}.

c. That the rates, times, spatial patterns, or depths of existing withdrawals of ground water are endangering the stability and optimum development of the fresh ground water body due to upconing or intrusion of salt water.

That, in the case of major aquifers, basal ground water levels are ~~declining~~ declining in excess of any estimated naturally occurring water

level decline or have declined to less than one-third the known or estimated ^{of such basal ground water aquifer} original ground water level when first discovered.

d. ^{that} The chloride content of one or more existing wells are increasing to levels which materially reduce the value of their existing use or which indicate salt water intrusion or upconing detrimental to ~~the~~ optimum conservation, development and management of the ground water reservoir being tapped.

e. d. That, in the opinion of the Board, any ~~future~~ proposed water development ~~if~~ ^{relative to} constructed would: (1) lead to a condition of ground water overdraft ^{recharge or salt water} in excess of natural replenishment; (2) lead to a decline in ground water level ^{which} that would be detrimental to maintaining the optimum development of the ^{fresh} ground water ^{body} reservoir; or (3) lead to a rise in chloride content ^{which} that would be detrimental to maintaining the most beneficial use ^{of} existing or proposed wells.

f e. That the estimated 250 milligrams per liter isochloride content line ~~(based~~
~~line~~ (based on the records of existing wells) of a basal ground water reser-
 voir occurs at or has encroached to an inland position such that it is causing
 or threatens to cause existing or future wells to be drilled at unnecessarily
 high elevations.

f. That excessive preventable waste of water is ~~not~~
 occurring.

3.7 Findings of Fact; Decision of Board:

~~ALL~~
 After the required public hearing and the investigations deemed
 necessary have been completed, the ^{manager} Chief Engineer shall make a written
 findings of fact on the proposed designation of a ground water area and
 submit it to the Board for ~~decision~~
 decision. If the Board decides to designate a grou
 a ground water area it shall cause a notice of the findings of fact and
 its decision to be published in a newspaper of general circulation in
 the appropriate county and when so published shall be final unless ^{its decision} *judicially*
 appealed ^{in the appropriate Circuit Court.} as provided in Chapter 91, HRS.

Effective Date of Designation.
 3.8 ^{For purposes of Rule 4.1 4.7b} For purposes of a ground water area
 of designation, shall be the 90th
 day prior to the date that the
 Board actually designates the
 ground water area.

the effective date
Has 50 days
10/17/93
above elsewhere

3.9 ~~3.8~~ Modifying and Rescinding Designated Areas.

The modification of the boundaries or the rescinding of existing designated ground water areas ^{by The Board} may be initiated by the ^{Manager Chief Engineer} Board ~~upon recommendation of the Chief Engineer or upon a motion of~~ any interested person.

The procedure for modifying the boundaries of an existing ground

water area shall be substantially ^{as} ~~in the manner~~ provided herein Rule 3

for the designation of a ground water area. The procedure for rescinding

an existing designated ground water area shall follow Rules 3.4 and 3.7;

^{except that} ~~however,~~ the effective date of rescinding shall be 30 days after the decision

is made by the Board.

RULE 1 - GENERAL PROVISIONS

1.1 Authority. These regulations are promulgated under Chapter 177, Ground Water Use, Hawaii Revised Statutes.

1.2 Incorporation by Reference. Any document or part therein incorporated by reference herein is a part of these regulations as though set out in full.

1.3 Revisions. These regulations may be revised or repealed at any time by the Board in accordance with Chapter 91, Hawaii Revised Statutes.

1.4 Legal Conflicts. These regulations, promulgated under Chapter 177, are not intended to repeal Chapter 178 or sections 71-1 to 71-4, Hawaii Revised Statutes, ^{however,} in the event of conflict, Chapter 177 and these regulations shall prevail.

1.5 Definitions

"Beneficial use" means use of water, including the method of diversion, storage, transportation, and application, that is reasonable and consistent with the public interest in the proper utilization of water resources; including, but not limited to, domestic, municipal, military, agricultural, and industrial uses.

"Board" means the board of land and natural resources.

development,

grants in carrying the
road transportation, and

and beneficial

1.5 (cont'd)

"Board" means Board of Land and Natural Resources

"Department" means Department of Land and Natural Resources

"Ground water" means any water found beneath the surface of the earth, whether in perched supply, dyke-confined, flowing, or percolating in underground channels or streams, under artesian pressure or not, or otherwise.

"Manager Chief Engineer" means The Manager Chief Engineer of the Division of Water and Land Development, Department of Land & Natural Resources, or his designated representative

"Person" imports the plural as well as the singular and includes governmental entities and agencies, public and private corporations, associations, estates, and individuals.

"Well" means any artificial excavation or opening into the ground, or artificial enlargement of a natural opening by which ground water is drawn or is capable of being drawn from the ground; the term includes, but is not limited to, circular, vertical, horizontal or approximately horizontal tunnels, and vertical or inclined shafts. [L 1961, c 122, pt of §1; Supp.

means
~~§178-1 Defined. A "well," for the purposes of this chapter, is defined to be~~
any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed into the ground to or penetrating any aquifer or basin whether or not the intended use of such excavation is for the location, exploration, diversion, or for the acquisition of any ground water by natural pressure or artificial means, or, is for the diversion, injection, recharge, or disposal of any water or liquid waste into any underground formation. [L 1963, c 39, pt of §1;

3/31/77

2664

GROUND WATER USE REGULATIONS

Star from line 5

Rule 1.6

[GENERAL] PRINCIPLES [AND] PROVISIONS [OF] GROUND WATER USE [ACT] REGULATION

a.

b. ^{of} Obtaining the most beneficial use of the State's ground water resources is the basic principle ^{in regulating} for measuring, limiting, and appropriating the use of ground water ^{in the best interest of the people of the State} shall be the ~~to protect the public health, safety, and welfare, and users' interest~~ during a water shortage or emergency situations. In the appropriation of the use of water, priority in time gives the better right.

c. ^{and appropriation} Except for specified emergency situations, the regulation of ground water use in the State is limited to areas classified by the Board of Land

and Natural Resources as "designated ground water areas". A designated ground water area is an area in which the Board ^{has found and publicly declared} finds it necessary to

regulate the use of ground water because ^{in its opinion} such usage ^{has caused or may cause} may be threatening ^{within the foreseeable future: a rate of withdrawal that exceeds the rate of natural recharge; a declining of water levels, a deterioration of natural recharge; a declining of water levels, a deterioration of water recharge; depletion (ground water levels are declining excessively), in the quality of water due to increasing chloride content; an or deterioration by salt water encroachments (increasing chloride content is excessive waste of water which can be prevented; or a reducing most beneficial} ~~or is causing ground water exhaustion (ground water use exceeds ground water recharge); depletion (ground water levels are declining excessively), in the quality of water due to increasing chloride content; an or deterioration by salt water encroachments (increasing chloride content is excessive waste of water which can be prevented; or a~~ ~~beneficial use of the water).~~

situation in which any further water development would endanger the ground water aquifer or the existing sources of supply.

a. No right to the use of ground water can be acquired or recognized ^{means of} ~~by prescription~~ ^{that is, say, by tradition or by} by prescription, ^{or} [a right that is acquired or established through] long time use or possession).

Within a designated ground water area
d. ^{Individual household} Except during a water shortage or emergency, ^{domestic uses (personal} uses of ground water shall ~~not~~ be regulated in any area, but reports of such uses must be filed with the Board, ^{as required}.

Within a designated ground water area
e. When the Board designates a ground water area, existing ground water uses which are lawful and beneficial may be preserved and continued if such uses are properly declared to an c and certified by the Board. However, the right to such preserved uses may be completely or partly lost through specified years of non-use.

Within a designated ground water area
f. After the Board has designated a ground water area, ^{all} ground water ^{individual household} uses or withdrawals, ^{except domestic uses and preserved uses}, shall be strictly regulated by ^{The issuance of} permits issued by the Board to use ground water ^{and permits} to supply ground water.

g. The Manager - Chief Engineers shall invite the participation of the appropriate County, water supply agency and outillage cooperative ^{any decision of the Board}

h. Any person adversely affected by the Board's action concerning certification or non-certification ^{or} non-certification of preserved uses ^{issuance or non-} issuance of a permit ^{or} regulations imposed during a water shortage or

water emergency may request an administrative ^{hearing} by the Board.

i. Any person aggrieved by an order or decision of the Board may ^{seek a judicial} review ^{in appropriate} ^{appeal to} the Circuit Court of the Jdk ^{Judicial Circuit in which the applicable} ground water area is located ^{for a review of the} ^{Board's} order or decision, ^{as} provided in Chapter 91, HRS.)

must [The Board may bring action in the appropriate Circuit Court to
enjoin any person violating these regulations and to enforce compliance
with these regulations.

Is this required
by law?

~~RULE 2~~~~DOMESTIC USAGE~~

INDIVIDUAL HOUSEHOLD USES

2.1 Definition.*Individual household uses*

Shall ~~be limited to~~ the use of water for personal purposes by an individual, a family, or household ^{mean, in these regulations,} or watering of stock in a farm operation; or ~~for the~~ irrigation of a family lawn or garden not exceeding 1/2 acre in area. ^{for: personal comforts and necessities;}

2.2 Exemption From Regulation.*individual household*

All domestic uses shall be exempt from the certification and permit requirements of these regulations, except during water shortages or water emergencies described in Rules ~~10~~ and ~~11~~. However, no person initiating a domestic use of water ^{with} in a designated ^{ground water} area may take court action against any preserve^d or committed permitted use therein.

2.3 Reports to be Filed.

The owner ^{or user} or operator of any well drilled or used for domestic purposes shall ^{file} with the Board records and reports ^{as} prescribed in Rule ~~2~~. ^{whether located in a designated ground water area or not,} ^{individual household uses}

RULE 7
GROUND WATER RECORDS AND REPORTS

7.1 General.

In order to insure that the ground waters of the State are utilized for the most beneficial purposes, for the best interest for the people of the State, and to provide a meaningful information base for making administrative decisions on the designation, allocation and use of ground water resources in the State, the Department shall:

(1) Collect, organize and catalogue existing information and studies available to it from all sources, pertaining to the ground water resources of the State;

(2) Develop such additional data and studies pertaining to the ground water resources of the State as are necessary to accomplish the objectives of the ground
Ground Water Use Act;

(3) Determine existing and future uses of and needs for ground water resources;

(4) Establish and maintain a water resources information center for the cataloging, storing and retrieving of ground water information and studies so that they may be readily available to and effectively used by the Department and the public generally.

A Notice of Intent shall not be disapproved except for good cause.

7.2 Notices of Intent to Drill, Deepen, Redrill, Plug or Alter Casing.

ground water
 within a designated area or not,
 Before a person ~~can~~ commence the drilling of a new well; the deepening, redrilling, plugging or altering of casing of an existing well; ~~or~~ the redrilling and rehabilitation of an abandoned well, *reconstruction* *or unused* *for approval an appropriate Notice of Intent*, such person must file with the Manager-
or the abandonment of a well

Chief Engineer on form

forms furnished by the

the Department a written notice of intent

to drill or notice to deepen, redrill, plug or alter casing, as the case may be.

[Any such] drilling *or construction* operations shall not commence until *written approval has been* a permit has been issued *received from* by the Manager-Chief Engineer, *proposed* provided that if the well is located within a designated

designated ground water area, a well *approval* ~~drilling~~ permit shall not be *given* ~~issued~~ unless

a permit to use water or to supply water therefrom has been issued by the Board. *Manager Chief Engineer*

[A well drilling permit for a well which is not located within a designated

ground water area may not be denied except for good cause. *At* ~~The~~ notices

of intent shall contain the following: *information*

a. The exact location of the well and its ground elevation.

b. The name by which the well shall be known.

c. The well owner's or user's proposed casing program.

d. The proposed withdrawal and use of water from the well,

e. The proposed total depth of the well

f. *the well, and such other information* as the Manager-Chief Engineer may deem appropriate *to carry*

on the intent of the Ground Water Use Act

7.3 Supplementary Supplementary Notices.

on forms furnished by the Department

A supplementary Notice must be filed with the Manager-Chief Engineer if there is any change in the original notice of intent and written approval must be received from the Manager-Chief Engineer for such change of work before such change of change of

work is started. In an emergency, the Manager-Chief Engineer or his designated representative may give verbal approval to the owner or user of the well ^{if he} ~~when~~ deemed appropriate to the objectives of the Ground Water Use Act.]

ground water area

7.4 Driller's Well Completion Report.

within a designated area or not, any work on a

Within 60 days after completion of ^{the} well, the person drilling or altering ^{the} a well shall file with the Manager-Chief Engineer a Driller's Well Completion Report on forms furnished by the Department. [This requirement shall apply to all wells drilled for ground water, whether whether in a designated

ground water area or not.] The driller's well completion report shall include the following information, where applicable, as a minimal ^{location of well;} location of well; ^{surveyed} surveyed with reference to the appropriate tax map key; proposed use of the well; the depth, diameter, and general specifications of the well; the thicknesses of the subsurface formations penetrated by the well; the specifications and depth of all casings installed; the pumping test results, including rates of pumping, drawdown of the water level, and chloride content of the pumped water; the depth to an elevation and the elevation of the static water level; the shut-in ^{piezo} ~~piez~~ ^{metric} water level measured above mean sea level level data, if the

well is artesian; and such ^{other} ~~additional~~ ^{actual} information as may be reasonably be required by the Department.

corrected till here

7.5 Well Records to be Kept.

The owner, user, or driller of any ~~ground water~~ ^{drilled for ground water} well shall keep, or cause to be kept a careful and accurate log, history of the drilling of the well including my methodology ^{li the logy} and depths of formations encountered, water bearing ^{water-bearing} formations, static water level, chloride content and temperatures of the ground water, and any other well surveys and logs of the characteristics of the well.

These well records shall be subject, during business hours, to the inspection of the ^{Manager Chief Engineer} Department or ~~its~~ ^{his} designated representative. The requirement for the keeping of well records shall not be construed to limit or restrict the Department from requiring the furnishing of such additional data or reports relating to the withdrawal of use of water ^{or} ~~as~~ such data or reports ^{as} may appear to be necessary or desirable, either generally or specifically, for the prevention of waste and the most beneficial uses of the ground water resources in the State.

7.6 Discharge Tests Required.

Within a designated area or not, the owner or user of any ^{new or reconstructed} well drilled for ground water shall perform, or cause to be performed, an appropriate discharge test ^{to determine the hydraulic characteristics of the well and the hydrologic characteristics of the ground water aquifer tapped by the well.} If the well is located within a designated ground water area, the owner or user shall perform or cause to be performed such discharge tests as may be required in the Water Use Permit issued for the well.

Annual
 7.17.6 ^{Required} Water ^{Withdrawal} Use Reports.

Within a designated ground water area or not,

producing
 The owner ^{operator} or user of any ground water well, whether in a designated ground water area or not, shall file with the Manager-Chief Engineer on or before the 60th day after the end of each calendar year ^{an annual water use} a report on the ~~monthly amounts of water withdrawn and the uses of such waters~~ ^{water levels, and chlorides} on forms

furnished by the Department.

Such reports shall include the amount of water withdrawn ^{and used for} each month of the calendar year and for the calendar year, and such ^{other} information as may be reasonably required by the Department.

3/31/77

Outline of Ground Water Use Regulation

REGULATIONS FOR THE CONTROL OF GROUNDWATER USE IN DESIGNATED AREA OF THE STATE

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1/24/78

SUBJECT TO CHANGE

STATE OF HAWAII
BOARD OF LAND AND NATURAL RESOURCES
Honolulu, Hawaii

Comments by
Dan Lum

1/26/78

REGULATIONS
ON
LEASING OF GEOTHERMAL RESOURCES
AND
DRILLING FOR GEOTHERMAL RESOURCES
IN HAWAII

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set back

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PART I - LEASING OF GEOTHERMAL RESOURCES

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1/24/78

REGULATIONS
ON
LEASING OF GEOTHERMAL RESOURCES
AND
DRILLING FOR GEOTHERMAL RESOURCES
IN HAWAII

PART I - LEASING OF GEOTHERMAL RESOURCES

RULE NO. 1
GENERAL

1.1 Purpose.

The purpose of these regulations is to provide for the leasing of State and reserved lands for the purpose of geothermal resources exploration, development and production and to provide for the regulation of all drilling for geothermal resources in Hawaii in order to prevent waste and to conserve and provide for optimum use of geothermal resources, to prevent waste, pollution and degradation of surface and ground water and other natural resources, to protect the environment, and to prevent injury to life and property.

1.2 Authority.

These rules are promulgated pursuant to the jurisdiction and authority of the Board of Land and Natural Resources provided in Chapters 177, 178, and 182 of the Hawaii Revised Statutes.

1.3 Incorporation by Reference.

Any document or part therein incorporated by reference herein is a part of these regulations as though set out in full.

1.4 Revisions.

These regulations may be revised or repealed at any time by the Board in accordance with the provisions of Chapter 91 of the Hawaii Revised Statutes. However, any revision to these regulations shall not affect the term or provisions of mining leases existing on the effective date of the revision, excepting those terms and conditions which may affect the health, safety and welfare of the public.

cancel on royalties

1.5 Definitions.

For purposes of these regulations, unless otherwise indicated herein by express term or by context, the term:

"Board" means the Hawaii Board of Land and Natural Resources.

"Chairman" means the Chairman of the Hawaii Board of Land and Natural Resources or his designated representative.

"Commercial quantities" means quantities sufficient to provide a return after current production and operating costs have been met.

"Department" means the Hawaii Department of Land and Natural Resources.

"Force Majeure" means any fire, explosion, flood, volcanic activity, seismic or tidal wave, mobilization, war (whether declared or undeclared), act of any belligerent in any such war, riot, rebellion, the elements, power shortages, strike, lockout, difference of workmen, any cause which prevents the economic mining of the geothermal resources, restraints by courts or other governmental authorities, failure or unreasonable delay by governmental authorities in issuance of permits or approvals or any other cause beyond the reasonable control of the parties affected, whether or not of the nature or character hereinabove specifically enumerated.

"Geothermal By-product" means (1) any mineral or minerals (exclusive of oil, hydrocarbon gas and helium) which are found in solution or developed in association with geothermal resources and (2) demineralized or desalted effluent water.

"Geothermal resources" means the natural heat of the earth, the energy, in whatever form, below the surface of the earth present in, resulting from, or created by, or which may be extracted from such natural heat, and all minerals in solution or other products obtained from naturally heated fluids, brines, associated gases and steam, in whatever form, found below the surface of the earth, but excluding oil, hydrocarbon gas or other hydrocarbon substances.

"Mining lease" means a lease of the right to conduct geothermal operations on State lands or reserved lands to discover, develop, produce, and utilize geothermal resources therein. Unless the context indicates otherwise, "lease" or "geothermal lease" means "mining lease".

"Mining lessee" means any person as defined herein to whom a mining lease has been granted including his transferee, assignee, sublessee or successor in interest. It also means any agent of the mining lessee or an operator holding authority by or through the mining lessee. Unless the context indicates otherwise "Lessee" means "mining lessee".

"Mining operations" means the process of excavation, extraction, and removal of minerals, and the development of any and all geothermal resources, from the ground, design engineering, other engineering, erection of transportation facilities and port facilities, erection of necessary plants, other necessary operations or development approved by the board preceding or connected with the actual extraction of minerals and the development of geothermal resources.

"Occupier" means any person entitled to the possession of land under a certificate of occupation, a nine hundred and ninety-nine year home-
stead lease, a right of purchase lease, a cash freehold agreement, or under a deed, grant, or patent, and any person entitled to possession under a general lease from the State of Hawaii, and also means and includes the assignee of the right to a mining lease from any one of the above.

"Operator" means any person as defined herein engaged in drilling, maintaining, operating, producing and/or having control or management of any geothermal well or the development of geothermal resources. [from lands within a mining lease granted by the Board.] The operator may be the landowner, the lessee, designated operator, or agent of the lessee or holder of rights under an approved operating agreement.

must include all operator and not just State leases.

"Person" means a United States citizen of legal age, association of such citizens, firms and corporations organized under the laws of the United States, any State or District of Columbia and qualified to do business in the State of Hawaii, including any governmental unit, trust or estate.

"Reserved lands" means those lands owned or leased by any person in which the State or its predecessors in interest has reserved to itself, expressly or by implication the minerals or right to mine minerals, or both.

"State lands" includes all public and other lands owned or in possession, use and control of the State of Hawaii or any of its agencies.

"Unit agreement" means an agreement or plan of development and operation for the production and utilization of geothermal resources as a single consolidated unit without regard to separate ownerships and which provides for the allocation of costs and benefits on a basis defined in the agreement or plan.

"Waste" means the unnecessary or excessive dissipation or loss of geothermal resources resulting from the location, spacing, drilling, equipping, operation or production of a geothermal resources well or wells, or with respect to the production, gathering, transportation, storage, handling or utilization of geothermal resources."

RULE NO. 2
GEOHERMAL EXPLORATION PERMITS

2.1 Exploration Permit Required on State and Reserved Lands.

An exploration permit is required to conduct any exploration activity which relates to the search on State or reserved lands for evidence of geothermal resources. Such exploration activity includes, but is not limited to, geophysical operations, drilling of shallow temperature test holes less than 500 feet in depth, construction of roads and trails, and cross-country transit by vehicle over State lands. All other drillings on State or reserved lands shall be regulated under Part II of these regulations.

2.2 Application for Exploration Permits.

Any person may apply for an exploration permit on any State or reserved land by submitting a written application to the Board containing the following:

a. The name and address of the person, association, or corporation for whom the operations will be conducted and of the person who will be in charge of the actual exploration activities.

b. A description of the type of exploration activities proposed to be undertaken.

c. A description of the lands to be explored.

d. A map or maps, available from State or Federal sources, showing the lands to be entered or disturbed.

e. The approximate dates of the commencement and termination of exploration activities.

f. A statement by applicant agreeing to submit to the Board within 20 calendar days after notification by the Board that the Permit Application has been approved a surety company bond in the amount of \$10,000.00 payable to the State of Hawaii conditioned upon compliance with all terms and conditions of Rule 2 of the Exploration Permit. If any person holds more than one Exploration Permit in the State of Hawaii it may file with the Board, in lieu of separate bonds for each Exploration Permit, a blanket bond in the amount of \$50,000.00.

g. The name and address of the surface owner of the land.

h. Evidence that the owner and surface lessee, if any, has consented to enter upon his land ~~or~~ that efforts have been made by the applicant to obtain the same without success. *or lease not*

2.3 Permit Filing Fee.

Each application shall be accompanied by a non-refundable filing fee in the amount of \$100.

2.4 Number of Permits.

There shall be no limitation as to the number of permits which may be applied for by any one person.

2.5 Approval of Permit Applications.

All applications shall be subject to the approval of and the terms and conditions set by the Board. Any application for a geothermal exploration permit not approved within 60 calendar days after the date of receipt of the application shall be resubmitted unless the same has been extended by the Board.

2.6 Non-Exclusive Permits.

Geothermal exploration permits under Rule 2 allow only non-exclusive access to State or reserved lands for geothermal exploration activity prescribed in Rule 2.1 and do not provide any preference rights to a mining lease of the lands explored by such permits. In the event an exploration permit is in effect on or issued after the commencement date of a mining lease covering all or part of the same State ^{or reserved} lands, such permittee's rights shall be subordinate to the lessee's rights and the permittee's exploration activities shall not unreasonably interfere with or prevent the mining lessee's use of the leasehold.

should include reserved lands also

2.7 Duration of Permits.

Exploration permits shall be valid for a period of one year from date of issuance, but may be renewed for an additional period of time at the discretion of the Board.

2.8 Confidentiality of Exploration Results.

Within 60 days after the termination date of an ~~Exploration~~ Permit, the permit holder shall submit the results of the exploration to the Chairman of the Board, which result shall be kept confidential by the Board. If the permit holder makes an application for a geothermal mining lease of the lands explored within a period of 6 months from the date the results are submitted to the Board, the Board shall continue to keep such results confidential until a lease for such lands has been issued or 3 years from the date of submission of the data, whichever is sooner. If the permit holder does not make an application for ^a geothermal mining lease ^{or leases}, of the lands explored within a period of 6 months from the date the results are submitted to the Board, the Board at its discretion need not keep the results confidential.

as the case may
✓

2.9 Departmental Investigation.

The Department may conduct scheduled and unscheduled inspections and investigations of operations conducted under geothermal exploration permits.

2.10 Suspension of Permits.

The Chairman may issue an order immediately suspending operations conducted under a geothermal exploration permit if the permittee is in violation of any terms or conditions of the permit or, in the judgment of the Chairman, such operations jeopardize the public health, safety, and welfare.

2.11 Cancellation of Permits.

The Board may cancel an exploration permit if it finds, after notice to the permittee and allowance for an opportunity for hearing and compliance with the requirements of the permit, that permit requirements are not being observed.

2.12 Compliance With Applicable Laws.

The permittee shall be required to comply with the requirements of all Federal, State and applicable County laws, rules and regulations.

RULE NO. 3
GEOHERMAL MINING LEASES

3.1 Geothermal Mining Leases.

The Board may, in accordance with these regulations grant mining leases conveying to the lessee the exclusive rights to drill, discover, develop, operate, utilize, and sell geothermal resources on state and reserved lands, subject, however, to the Board's right to issue exploration permits on the leased land for the sole purpose of evaluating the extent of geothermal resources existing on adjacent state or reserved land. The Board shall set forth the terms and conditions of such a mining lease prior to the public auctioning or granting without public auction.

3.2 Geothermal Resources Available for Leasing

All State and reserved lands shall, at the discretion of the Board, be considered available for geothermal mining leases.

3.3 Persons Eligible to Hold Leases.

Any person as defined in Rule 1.5 of these regulations shall be eligible to lease geothermal resources in State or reserved lands or take or hold an interest therein, unless said person is in arrears in the payment of taxes, rents or other obligations owing the State or any of its political subdivision.

3.4 Mining Leases by Public Auction.

Mining leases on State lands shall be granted only on a competitive bid basis at public auction as provided in Rule 4.

Chap 182 uses term "occupier"
Also "occupier" is used in 5.3
which conflicts

Delete first sentence.
not clear

3.5 Mining Leases Without Public Auction.

~~However, no lease shall grant and include an area of~~
Mining leases on reserved lands may be granted on a competitive bid basis by public auction; or without public auction to the ~~owner of the surface estate thereon~~ ^{occupier} or to his assignee of the rights to obtain a mining lease, upon the vote of two-thirds of the Board members, pursuant to Sec. 182-5, HRS.

3.6 Size of Leaseable Tract.

Unless otherwise approved by the Board a geothermal mining lease shall not embrace an area of more than 5,000 acres of contiguous land, or more than 2,560 acres of contiguous land if that area's longest dimension is six times greater than its narrowest dimension. A geothermal mining lease shall embrace an area of not less than 100 acres, unless the Board, at its discretion, deems otherwise.

3.7 Transfer of Mining Leases.

a. Any transfer of a mining lease which includes the assignment or sublease thereof, shall be subject to the approval of the Board and pursuant to the law. No transfer to a minor, except to an heir or devisee will be permitted. All applications for approval of transfers must be accompanied by a non-refundable fee of \$100.00 for each assignment.

b. Upon approval of the Board a mining lease may be transferred in whole or in part, to a transferee who shall have the same qualifications as any bidder for a mining lease. The transferee shall be bound by the terms of the lease to the same extent as if the transferee were the original lessee. The Board may release the transferor from any liabilities or duties under the mining lease as to the portion thereof transferred except for any liability or duty which arose prior to the approval of the transfer by the Board and which remains unsatisfied or unperformed.

c. No transfer shall be effective until written approval is given by the Chairman. A transfer shall take effect the first day of the month following the written approval of the transfer.]

d. A lease may be transferred as to all or part of the acreage included therein to any person qualified to hold a State lease, provided that neither the transferred nor the retained part created by the transfer shall contain less than 100 acres unless the Board at its discretion approves otherwise. No undivided interest in a lease of less than 10% shall be created by any voluntary transfer.

e. The transferor and his surety shall continue to be responsible for performance of any and all obligations under the lease unless released by the Board. After the approval of any transfer, the transferee and his surety shall be bound by the terms of the lease to the same extent as if the transferee were the original lessee, any conditions in the transfer to the contrary notwithstanding.

Chap 182 says "occupier" which is not necessarily the surface owner

Follows Chap 182-8

f. Where a transfer does not convey separate interest in the record title to the lease, the transferee, if the transfer so provides, may become a joint principal on the bond with the transferor. The application must also be accompanied by a consent of the surety to remain bound under the bond of record, if the bond, by its terms, does not contain such consent. If a party to the transfer has previously furnished a statewide bond, no additional showing by such party is necessary as to the bond requirement.

g. Overriding royalty interests in geothermal leases constitute accountable acreage holdings under these regulations when applicable. If an overriding royalty interest is created which is not shown in the instrument of transfer, a statement must be filed with the Chairman describing the interest. Any such transfer shall be accompanied by a statement over the transferee's signature that the transferee is a person as defined in these rules and that his interests in geothermal leases do not exceed any acreage limitations established. All transfers of overriding royalty interests without a working interest and otherwise not contemplated by Rule 3.7 must be filed for record in the office of the Department in Honolulu within ninety (90) days from the date of execution. Such interests will ~~not~~ require approval.

h. No overriding royalty on the production of geothermal resources created by a transfer contemplated by Rule 3.7 or otherwise shall be less than one-fourth (1/4) of 1 percent nor exceed 5 percent nor shall an overriding royalty, when added to overriding royalties previously created, exceed 5 percent.

3.8 Revocation of Mining Leases.

A mining lease may be revoked by the Board if the lessee fails to pay rentals and/or royalties when due or to comply with any of the other terms of the lease, ^{or of law} or if these regulations are not complied with, or if the lessee wholly ceases all mining operations for a period of one year without the written consent of the Board for reasons other than force majeure ^{or} the production of less than commercial quantities of geothermal resources ^{or} by-products ^{or} for the lack of a commercial market for geothermal resources. However, the Board shall give the lessee written notice of any default and the lessee may be allowed six months from the date of the written notice to remedy the default before revocation of the lease.

Follows
chap. 182

Does not
follow Chap.
182. Query
also that
it does ^{NOT} follow
3.11 d

Upon the revocation of a geothermal mining lease ~~lessee shall have the right to retain any and all drilling or producing wells, plants and facilities and the geothermal mining lease as to an appropriate portion of the land surrounding same, as to which no default exists, together with such rights to the surface of the land as may have been granted to lessee. For those areas in default, lessor shall have the right to retain the improvements or require the lessee to remove the same.~~

Does not
follow Chap 18.
Query that
that it should
be deleted
because it
does not
protect State
interest.

3.9 Surrender of Mining Leases.

Any lessee of a mining lease, who has complied fully with all the terms, covenants, and conditions of an existing lease and provisions of these Regulations, may, with the consent of and under such terms and

a divided or undivided interest in geothermal resources in State or reserved lands in excess of 40,000 undeveloped acres.

conditions set by the Board surrender at any time and from time to time all or any part of the mining lease or the land contained therein upon payment as consideration therefor two years' rent prorated upon the portion of the lease or land surrendered pursuant to Section 183-13 of Chapter 182, HRS, unless the law provides otherwise. Upon any such approved surrender, the lessee shall be relieved of all further obligations with respect to the lands so surrendered except for previous activities conducted on the land or under the lease. A mining lease may also be surrendered if as a result of a final determination by a court of competent jurisdiction, the lessee is found to have acquired no rights in or to the minerals on reserved lands, nor the right to exploit the same, pursuant to the lease, and, in such event, the lessee shall be reimbursed for all rentals, royalties and payments paid to the State pursuant to the lease. The lessee shall be entitled to all equipment, buildings and plants placed on the land surrendered and the lessor may require the lessee to remove the same.

3.10 Number of Mining Leases; Leasehold Limitations

There shall be no limit on the amount of acreage or upon the number of geothermal mining leases that may be granted to a person undertaking any geothermal mining operation, provided, however, the Board may set a limit on the total aggregate acreage pursuant to Chapter 91, HRS, but in no event shall such limit be less than 40,000 acres. However, no person shall take hold, own or control at any one time, whether acquired from the Board under these rules by lease or approved transfer of lease, or indirectly,

If an acreage limitation has been established, then in computing total holdings, ownership, or control, no person shall be charged with an interest through any association, firm or corporation unless he is the beneficial owner of 10 percent or more of the stock or other instruments of ownership or control of such association, firm, or corporation. In such a case and in the case of an undivided interest, the amount of acreage chargeable to the person shall be the pro-rata amount of acreage based on the percentage of stocks or interest owned. Persons owning an overriding royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with an interest. Undeveloped acreage which is actually producing geothermal resources in commercial quantities shall not be included in accountable interests. Any and all leases creating the excess acreage may be canceled or forfeited in their entirety by the Board. A person may hold an unlimited interest in acreage which is producing geothermal resources and paying production royalties.

3.11 Term of Mining Leases.

a. The term of all mining leases shall consist of a primary ten-year period and continuation periods which shall be as provided herein, except that the sum of primary and all continuation periods of such leases shall not exceed 65 years from the effective date. The effective date of all leases shall be the first day of the month following the Board's signing of the lease.

b. If during the primary period of a mining lease, geothermal resources or by-products are being produced or utilized in commercial quantities, that lease shall continue for so long thereafter as geothermal resources or by-products are produced or utilized in commercial quantities except for the 65-year limit provided in Rule 3.11a. Production or utilization of geothermal resources in commercial quantities shall be deemed to include the completion

for purposes of this paragraph "b"

with the approval of the Board

in determining the 40,000 acre undeveloped acreage limitation.

Note the Chap 182 say no limit on no. of leases

Query that there should be an acreage limitation of not more than 51,200 acres to protect State's interest in not having large acreage unexplored and undeveloped.

and paying production royalties.

3.13 Royalties on Geothermal Production.

*Insert
this
sect.*

a. The rate of the royalty to be paid to the State of Hawaii for the production of geothermal resources shall be determined by the Board prior to the bidding for or granting of a mining lease, but the rate shall not be less than ten (10) percent nor more than twenty (20) percent of the gross amount or value of the geothermal resources produced under the lease as measured at the wellhead and sold or utilized by the lessee. The Board may readjust the rate of royalty of any geothermal mining lease at not less than 15-year intervals beginning thirty-five years after the effective date of such lease. In the event of any such readjustment, the rate of royalty may not be increased by more than 50 percent over the royalty paid during the preceding period. The Board shall give notice of any proposed readjustment of royalties and unless the lessee files with the Board objection to the proposed royalties or surrenders

the lease within thirty days after receipt of such notice, the lessee shall conclusively be deemed to have agreed with such terms and conditions. If the lessee files objections and no agreement can be reached between the Board and the lessee within a period of not less than sixty days, the lease may be terminated by either party. In no event shall the rate of such royalty payable exceed 20 percent of the gross value. In addition to the above, the Board may also impose a royalty based on a percentage of the net profit, cash bonus or otherwise.

If the Board determines, after giving lessee an opportunity to be heard, that the lessee is proceeding diligently to acquire a contract to sell or to utilize the production or is progressing with installations needed for production, the lease may be continued in force for an additional five (5) years, upon payment of rentals; otherwise the lease may be terminated by the Board.

of one or more wells producing or capable of producing geothermal resources for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than fifteen years from the date of commencement of the primary term of the lease.

under said lease

c. If, at the end of the primary term of a mining lease, geothermal resources are not being produced from the leased land, but the lessee is actively engaged in drilling operations ^{thereon} below the depth of 1,000 feet or at a lesser depth of productive zone in a diligent manner [under a lease or unit plan] that lease may be continued, at the discretion of the Board, for a period of five years and for as long thereafter as geothermal resources are being produced or utilized in commercial quantities except for the 65-year limit provided in Rule 3.11a. *not more than*

makes clear that diligent drilling must occur on the leased land and not under another leased parcel

d. If the Board determines that the lessee has voluntarily shut in production for lack of a market but is proceeding diligently to acquire a contract to sell or to utilize the production or is progressing with installations needed for production, the lease shall continue in force, for ~~an additional~~ ^{not more than} five (5) years, upon payment of rentals, otherwise the lease may be terminated by the Board. The Chairman shall continue to review shut-in leases ^{for the duration of the primary period or} every five (5) years until production in commercial quantities occurs or the lease is terminated by the Board for lessee's lack of due diligence or surrendered by the lessee.

3.12 Rentals.

a. The lessee of a mining lease shall pay to the State of Hawaii in advance each year the annual rental bid for each acre or fraction thereof under lease. The annual rental for the first year of the lease shall be due and payable and shall be received in the office of the Department in Honolulu within two days after the acceptance of the bid by the Board and the \$500 bid deposit shall be credited against such sum. Where a lease is granted without public auction, the Board may impose such other terms and conditions. ^{for first year rental payment} Second year and subsequent rental payments must be received in the office of the Department in Honolulu on or before the anniversary date of the lease.

For clarity

b. Annual rentals for each acre or fraction thereof under lease shall be at the price bid at public auction or as set by the Board, as the case may be. The annual rental due and paid each year shall be credited against production royalties due and accrued during that same year, if there be any. The annual rental due a given year shall not be credited against production royalties due in future years.

3.13 Royalties on Geothermal Production.

a. The rate of the royalty to be paid to the State of Hawaii for the production of geothermal resources shall be determined by the Board prior to the bidding for or granting of a mining lease, but the rate shall not be less than ten (10) percent nor more than twenty (20) percent of the gross amount or value of the geothermal resources produced under the lease as measured at the wellhead and sold or utilized by the lessee. ~~unless the Board determines~~

Query

The meaning of this.

Also comment have considered that limit be set in reg.

This will dis courage exploration of geoth. res.

delete section "a" and substitute section "a" from

draft.

This is not in Chap. 182
only rentals and royalties

otherwise.] The Board may also require payments based on a percentage of the net profit, cash bonus or otherwise. The Board may propose to readjust the rental and rate of royalty of any geothermal mining lease at not less than 15-year intervals beginning thirty-five years after the effective date of such lease. In the event of any such readjustment, the rental and rate of royalty may not be increased by more than 50 percent of that paid during the preceding period. The Board shall give written notice of any proposed readjustment of rental and royalties and unless the lessee files with the Board written objection to the proposed rentals and royalties or surrenders the lease within thirty days after receipt of such notice, the lessee shall conclusively be deemed to have agreed with such terms and conditions. If the lessee files objections and no agreement can be reached between the Board and the lessee within a period of sixty days, the rental and royalty rates shall be determined by an appraiser whose services shall be contracted for by lessor; provided, that should lessee fail within thirty (30) days after receipt of the appraisal report, to agree upon the rental and royalty rates as determined by lessor's appraiser, lessee shall within ten (10) days thereafter appoint his own appraiser who shall have sixty (60) days to prepare an independent appraisal report and the two appraisers shall then exchange their reports for review. The two appraisers shall make every effort to resolve whatever differences they may have. However, should differences still exist thirty (30) days after the exchange, the two appraisers shall then appoint an arbitrator, and in case they shall fail to do so within thirty (30) days, either lessor or lessee may apply to the senior judge of the Circuit Court of the judicial circuit in which the leased land is located for appointment of the arbitrator. The rental and royalty rate shall then be determined by a majority of the appraisers and the rate shall be final and binding upon both lessor and lessee, subject to vacation, modification or correction in accordance with the provisions of Sections 658-8 and 658-9, Hawaii Revised Statutes. Lessee shall pay for his own appraiser. The cost of the services of the arbitrator and all other costs in connection with such appraisal and arbitration shall be borne equally by lessor and lessee. All appraisal reports shall become part of the public record of lessor. Subject to the limitations herein set forth the arbitrator shall fix as the adjusted royalty rate the prevailing royalty rates charged by lessors in the United States for mining geothermal resources of a similar kind and quality under similar conditions. In no event shall the rental or rate of such royalty payable be less than that paid for the previous period nor shall the royalty rate exceed twenty (20) percent.

b. For the purpose of computing royalties, the amount or value of geothermal resources produced shall be ~~based on~~ ^{determined as} the gross proceeds received by the mining lessee from the sale or use of geothermal resources produced from the leased land as measured at the wellhead. In the event that geothermal production hereunder is sold to a third party, ^{not} ~~or~~ ^{but} used or furnished to a plant owned or controlled by the lessee, the gross proceeds of such production for purposes of computing royalties shall be that which is reasonably equal to the gross proceeds being paid to other geothermal producers for geothermal resources of like quality and quantity under

rental should be deleted. Does not make sense after the 35th year. Because there must be royalties from production for the lease to have been continued to the 35th year. And rental are credited against royalties.

To avoid an administrative nightmare or headache I recommend we stick to original 3.13, which follows Federal regs or fix royalties for life of lease.

For Clarification "If sold to a third party is covered in first sentence. Second sentence is for situation when resource is not sold to another party and value must be compared."

similar conditions after deducting any and all treating, processing and transportation costs incurred. In such cases, should the Board believe that any stated charges imposed and deducted are excessive or that the stated sales price received by the lessee is unreasonable, the lessee shall upon thirty (30) days notice, provide the Board with evidence that the charges or price or both comply with the above requirement of reasonably equal gross proceeds. Gross proceeds shall not be deemed to include excise, production, severance or sales taxes or other taxes imposed on the lessee by reason of the production, severance or sale of geothermal resources or geothermal by-products.

c. [Unless the Board determines otherwise] the rate of royalty to be paid to the State of Hawaii for any geothermal by-product contained in and extracted from the effluence produced shall be not less than 5 percent nor more than 10 percent of the gross proceeds received by the lessee from the sale of any such by-product produced under the lease as measured at the wellhead and sold, exchanged or otherwise disposed of by the lessee, including demineralized or desalted water, after deducting any treating, processing and transportation costs incurred, if applicable. No payment of a royalty will be required on such water if it is used in plant operation for cooling or generation of electric energy or is reinjected into the subsurface. No royalty shall be paid for geothermal by-products used or consumed by lessee in his production operations. The Board may readjust the rate of royalties for the production of geothermal by-products in the same manner and under the same terms prescribed in Rule 3.13a except that the rate of royalty for geothermal by-products payable shall not exceed 10 percent of the gross proceeds. Gross proceeds shall not include the taxes described in paragraph "b" above.

Companies have consistently asked that limit be set in rego.

d. The lessee shall make payment of royalties to the Board in Honolulu within thirty days after the end of each calendar month and accompany such payment with a certified true and correct written statement by the lessee, showing the amount of each geothermal resource produced, sold, used, and otherwise disposed of, and the basis for computation and determination of royalties. Lessee shall furnish such other data as may be necessary to enable the Board to audit and verify all royalties due and payable to the State of Hawaii.

e. Metering equipment shall be maintained and operated by lessee in such a manner as to meet acceptable standards of accuracy consistent with geothermal industry practices. Use of such equipment shall be discontinued at any time upon determination by the Chairman that standards of accuracy or quality are not being maintained and, if found defective, the Chairman will determine the quantity and quality of production from the best evidence available.

f. The lessee shall furnish the Chairman the results of periodic tests showing the content of by-products in the produced geothermal resources. Such tests shall be taken as specified by the Chairman and by the method of testing approved by him, except that tests not consistent with industry practice shall be conducted at the expense of the State of Hawaii.

3.14 Commingling.

Lessee shall have the right, at its election prior to sale, to commingle geothermal resources produced from the leased land with that produced from other leases held by him or by other lessees as specified in the lessee's approved plan of operation for the lease. However, before there shall be such a commingling of geothermal production the lessee shall determine the quantities and value of such production upon which royalties are due under the lease and agrees that in making such determinations, all measurements and samples shall be made and taken in accordance with good geothermal industry practices.

3.15 Unit or Cooperative Plans.

a. For the purpose of more properly conserving the natural resources of any geothermal pool, field or like area, lessees under leases issued by the Board may, with the written consent of the Board, utilize the State lands under a unit, cooperative or other plan of development or operation with other State, Federal, or privately owned lands. Applications to unitize shall be filed with the Board which shall certify whether such plan is necessary or advisable in the public interest. The Board may require whatever documents or data it deems necessary. To implement such unitization, the Board may with the consent of its lessees modify and change any and all terms of leases issued by it which are committed to such unit, cooperative or other plans of development or operations.

b. The unit agreement shall describe the separate tracts comprising the unit, disclose the apportionment of the production or royalties and costs to the several parties, and the name of the operator, and shall contain adequate provisions for the protection of the interests of all parties, including the State of Hawaii. The unit agreement shall be signed by or in behalf of all interested necessary parties before being submitted to the Board. It will be effective only after approval by the Board. The unit operator must be a person as defined by these rules and he must be approved by the Board.

c. The owners of any right, title or interest in the geothermal resources to be developed or operated under such an agreement can be regarded as proper parties to a proposed agreement. All such owners must be invited to join as parties to the agreement. If any owner fails or refuses to join the agreement, the proponent of the agreement should declare this to the Board and should submit evidence of efforts made to obtain joinder of such owner and the reasons for nonjoinder.

d. In lieu of separate bonds required for each lease committed to a unit agreement, the unit operator may furnish and maintain a collective corporate surety bond or a personal bond conditioned upon faithful performance of the duties and obligations of the agreement and the terms of the leases subject thereto and these Regulations. Personal bonds shall be accompanied by a deposit of negotiable Federal securities in a sum equal in value to the amount of the bond and by a proper conveyance to the Board with full authority to sell such securities in case of default in the performance of the obligations assumed. The liability under the bond shall be for such amount as the Board shall determine to be adequate to protect the interests of the State of Hawaii. Additional bond coverage may be required whenever deemed necessary by the Board. In case of changes of unit operator, a new bond must be filed or a consent of surety to the change in principal under the existing bond must be filed with the Board.

e. Any modification of an approved agreement will require approval of the Board under procedures similar to those cited in paragraph "a" above.

f. The term of all leases included in any cooperative or unit plan of development or operation shall be continued automatically for the term of such unit or cooperative agreement, but in no event beyond that time provided in Rule 3.11. Rentals or royalties on leases so extended shall be at the rate specified in the lease.

g. Any lease which is to be eliminated from any such cooperative or unit plan of development or operation, or any lease which shall be in effect at the termination of any such cooperative or unit plan of development or operation, unless relinquished, shall continue in effect for the term of the lease or for one year after its elimination from the plan or agreement or the termination thereof, whichever is longer, and so long thereafter as lessee engages in diligent and continuous drilling as provided in Rule 7.8, or so long thereafter as geothermal resources are produced in commercial quantities, but in no event beyond the time provided in Rule 3.11a.

h. Before issuance of a lease for lands within an approved unit agreement, the lease applicant or successful bidder will be required to file evidence that he has entered into an agreement with the unit operator for the development and operation of the lands in a lease if issued to him under and pursuant to the terms and provisions of the approved unit agreement, or a statement giving satisfactory reasons for the failure to enter into such agreement. If such statement is acceptable, he will be permitted to operate independently, but will be required to perform his operations in a manner which the Board deems to be consistent with the unit operations.

3.16 Bond Requirements.

Every lessee of a mining lease or transferee thereof shall file with the Board, a bond in the amount of \$10,000.00 in a form approved by the Board and made payable to the State of Hawaii, conditioned upon faithful performance of all requirements of Chapter 182, Hawaii Revised Statutes, of these Regulations, and of the mining lease, and also conditioned upon full payment by the lessee of all damages suffered by the occupiers, in the case of State and reserved lands. If any person, holds more than one lease in the State of Hawaii it may file with the Board, in lieu of separate bonds for each lease, a blanket bond in the amount of \$50,000.00.

3.17 Liability Insurance.

Prior to entry upon the leased lands, lessee or lessee's assignee, sublessee or transferee, as the case may be, shall cause to be secured and to be thereafter maintained in force during the term of the lease, public liability and property damage insurance from an insurance company licensed to do business in the State of Hawaii in amounts to be determined by the Board and stated in the geothermal lease for injuries to persons, wrongful death, and damages to property caused by any occupancy, use, operations or any other activity on leased lands carried on by lessee, or lessee's assignee, sublessee or transferee, as the case may be, its agents or contractors in connection therewith. Liability coverage for explosion, collapse and underground hazards are to be included prior to any drilling of a well for geothermal discovery, evaluation or production. Lessee shall evidence such additional coverage to the Chairman prior to initiation of drilling operations. If the land surface and improvements thereon covered by the lease have been sold or leased by the State of Hawaii to a person other than the lessee, the owner or lessee of surface rights and improvements shall be a named insured. The State of Hawaii, any owner and any lessee of surface rights and improvements shall be a named insured in all instances. This policy or policies of liability insurance shall contain the following special endorsement:

"The State of Hawaii, the Hawaii State Board of Land and Natural Resources, the Chairman of the Board of Land and Natural Resources, the Department of Land and Natural Resources, and (herein insert name of owner or lessee of surface rights, if applicable) and the officers, employees and agents of each and every of the foregoing (hereinafter referred to as "named insureds") are insureds under the terms of this policy, provided, however, said insureds shall not be insured hereunder for any primary negligence or misconduct on their part, but shall be insured hereunder for secondary negligence or misconduct, which shall include the failure to discover and cause to be corrected the negligence or misconduct of lessee, its agents or contractors. This insurance policy will not be cancelled without thirty (30) days prior written notice to the Board and all named insured. None of the foregoing additional insureds is liable for the payment of premiums or assessments on this policy."

No cancellation provision in any insurance policy shall release the lessee of the duty to furnish insurance during the term of this contract. Said policy or policies shall be underwritten to the satisfaction of the Chairman. A signed and complete certificate of insurance, with the endorsement required by this paragraph, shall be submitted to the Chairman prior to entry upon the leased land. At least thirty (30) days prior to the expiration of any such policy, a signed and complete certificate of insurance, with the endorsement required by this paragraph, showing that such insurance coverage has been renewed or extended, shall be filed with the Chairman.

3.18 Hold Harmless.

In addition to the insurance requirements of Rule 3.17 (Liability Insurance) the mining lessee shall expressly agree to hold harmless and indemnify the State of Hawaii and its divisions, departments, agencies, officers, agents and employees, together with the owner or lessee of the surface rights of the leased land, if any, from any and all liabilities and claims for damages and/or suits for or by reason of death or injury to any person or damage to property of any kind whatsoever, whether the person or property of mining lessee, his agents, employees, contractors, or invitees, or third persons, from any cause or causes whatsoever caused by any occupancy, use, operation or any other activity on the leased land or its approaches, carried on by the mining lessee, his agents, employees, contractors, or invitees, in connection therewith; and the mining lessee shall covenant and agree to indemnify and save harmless the State of Hawaii, the Board, the Chairman, the Department, owner or lessee of surface rights if there be one, and their officers, agents, and employees from all liabilities, charges, expenses (including counsel fees) and costs on account of or by reason of any such death or injury, damage, liabilities, claims, suits or losses.

3.19 Title.

The State of Hawaii does not warrant title to the leased lands or the geothermal resources and associated by-products which may be discovered thereon; the lease is issued only under such title as the State of Hawaii may have as of the effective date of the lease or may thereafter acquire. If the interest owned by the State in the leased lands includes less than the entire interest in the geothermal resources and associated by-products for which royalty is payable as determined by the courts or otherwise, then the rents and royalties provided for in the lease shall be paid to the State only in the proportion which its interest bears to said whole for which royalty is payable, and the State shall be liable to such persons for any prior payments made as adjudged by the courts or otherwise; provided, however, that the State shall not be liable for any damages sustained by the lessee.

RULE NO. 4 PROCEDURES FOR LEASING OF STATE LANDS

4.1 Application to Board; Filing Fee

Any person as defined in these regulations may apply to the Board for a mining lease on State lands or the Board at its discretion may offer such lands for lease. The applicant shall submit three copies of a written application on forms provided by the Department and all application forms must be completed in full, signed by the applicant or his authorized representative with proof of authorization, three (3) copies of all necessary exhibits, and the filing fee.

Each application for a mining lease shall be accompanied by a non-refundable filing fee in the amount of \$100.00.

4.2 Lease Application Exhibits

Each application for a geothermal mining lease shall be accompanied by the following exhibits:

- a. An accurate description and map of the land desired to be leased.
- b. A description of the known or potential geothermal resource desired to be leased for exploration and development.
- c. Brief preliminary proposal of plan for geothermal exploration and development and an assessment of the environmental impact from geothermal resource exploration and development.
- d. Certificate that the applicant is qualified to hold a mining lease under Rule 3.3 and that the officer executing the application is authorized to act on behalf of the partnership, corporation or association, as the case may be, and that geothermal interests held do not exceed the acreage limitation prescribed in Rule 3.10.
- e. Information furnished by the applicant shall be kept confidential by the Board until the land has been offered for leasing at public auction and for such additional period of time as the Board may deem necessary. Only a description of the land nominated for leasing may be made public by the Board.

4.3 Public Notice of Lease Applications.

As soon as practicable after receipt of an application, a notice of the lease application shall be published in a newspaper of general circulation in the county where the land nominated for leasing is located at least once in each of three successive weeks, describing the land nominated for leasing.

4.4 Consideration of Applications.

Within twelve weeks from the date of the first publication of notice of a lease application for State land or as soon as practicable thereafter, the Board may hold a public hearing to decide whether or not to lease the land and if deemed appropriate may modify the area sought to be leased. Prior to making its decision, the Board may require an applicant to submit a full evaluation of the potential effect of geothermal exploration and development on the environment, fish and wildlife resources, aesthetics, population, and other resources in the area. This evaluation will consider the potential impact of possible geothermal development and utilization including the construction of power generating plants and transmission facilities. The Board shall consider the views and recommendations of other governmental agencies, organizations, industries and lease applicants and shall consider all other potential factors, such as use of the land and its natural resources, the need for geothermal energy development and socio-economic conditions consistent with multiple-use management principles. The Board's decision whether or not to lease and selection of the area to be offered for lease shall be final and not subject to judicial review.

4.5 Rejection of Lease Applications.

If the Board determines that the existing or reasonably foreseeable future use of the land being sought for lease would be of greater benefit to the State than the proposed mining use of the land, it may disapprove the application for a mining lease of the land.

4.6 Approval of Lease Applications.

If the Board determines that the proposed mining use of the land would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land, the Board shall determine the area to be offered for lease and determine any special terms and conditions to be included in the lease to provide for orderly and optimum geothermal development, to protect the environment, to permit use of the land for other purposes, and to protect other natural resources.

4.7 Public Notice of Lease Sales.

When the Board has approved a mining lease to be offered for sale by competitive bidding at public auction, it shall cause a notice to be published in a newspaper of general circulation in the State and in the county where the land is located at least once in each of three successive weeks, setting forth the time and place of public auction, the description of the land, the geothermal rights to be leased, and the terms and conditions of the lease sale including upset or minimum rental rate, royalties, cash bonus, percentage of the net profit or otherwise. The notice shall also indicate that a proposed plan of operation must be filed and approved before the lessee shall be permitted to commence operations of any kind.

4.8 Qualification of Bidders.

At least 30 days before the announced date of any public auction, all bidders shall have submitted to the Board evidence of their experience and financial ability to conduct geothermal explorations, drill geothermal wells, and develop geothermal resources.

4.9 Bidding Requirements.

On or before the announced date of the public auction, each prospective bidder shall deposit with the Board a certified or cashier's check payable to the State of Hawaii in the amount of \$500 and submit a statement that the person is qualified to hold a mining lease as prescribed in Rule 3.3. The deposit shall be forfeited by prospective bidders who fail to bid or returned to the unsuccessful bidders.

4.10 Award and Execution of Leases.

The lease offered for bid shall be awarded to the highest responsible qualified bidder. However, the right to reject any and all bids or waive any defects which will be in the best interest of the State, is reserved to the

Board. If the Board fails to award the lease within 60 days after the date of the public auction, all bids for that lease will be considered rejected. Deposits on rejected bids shall be returned. Within two days after acceptance by the Board of the highest responsible bid, the successful bidder shall pay to the Board the amount of the first year's rental bid and the \$500 deposit shall be credited against such sum.

Three copies of the lease will be sent to the successful bidder who shall within 30 days from delivery thereof be required to execute and return them, and to file the required bond or bonds. When the three copies of the lease are executed by the successful bidder and returned to the Chairman, the lease will be executed by the authorized officers of the Board and a copy will be mailed to the lessee. If the successful bidder fails to execute the lease or otherwise comply with the applicable regulations, his deposit will be forfeited.

RULE NO. 5
PROCEDURES FOR LEASING OF RESERVED LANDS

5.1 Application to Board.

Applications for mining lease on reserved lands shall be made to the Board in accordance with Rules 4.1, 4.2, 4.5 and 4.6.

5.2 Approval of Leasing by Public Auction.

If the occupier or his assignee of the right to obtain a mining lease should fail to apply for a mining lease within six months from the date of notice from the Board of its finding that it is in the public interest that the geothermal resources in the reserved lands be mined, a mining lease shall be granted by public auction under Rule 4, provided that the bidders at the public auction shall bid on an amount to be paid to the State for a mining lease granting to the lessee the right to develop the geothermal resources reserved to the State. In any event, the Board may also require the payment of cash bonus, percentage of the net profit or otherwise.

Does
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follow
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5.3 Approval of Leasing Without Public Auction.

The Board may, by the vote of 2/3 of its voting members, grant a mining lease on reserved lands to the occupier thereof or such occupier's assignee of the right to apply for a lease thereof without public auction pursuant to Sec. 182-5, HRS. The Board shall determine the annual rental to be paid to the State of Hawaii for the right to develop and utilize the geothermal resources reserved to the State and the royalty on geothermal production as prescribed in Rule 3.13. In any event, the Board may also require the payment of cash bonus, percentage of the net profit or otherwise.

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RULE NO. 6
SURFACE RIGHTS AND OBLIGATIONS

6.1 Compensation to Occupiers.

The mining lessee shall negotiate in good faith with the occupier of State or reserved lands for the settlement of all claims for damages to occupier's crops, improvements, or surface of the land caused by the mining lessee's operations. The lessee shall hold the Board exempt and harmless from and against any and all such damage claims, provided, however, the Board may cooperate fully with the lessee, at the lessee's expense, in negotiating or contesting such damage claims. However, nothing herein shall be construed to prevent the occupier of reserved lands from demanding and receiving rentals from the lessee of the mining lease. The occupier may in writing before or within thirty days after the public auction notify the Board that he elects to have the amount of damages and/or the amount of rentals to be paid as a result of the mining lease determined by arbitration with the successful bidder. In such event, the occupier shall notify the successful bidder of his election to arbitrate, and the arbitration shall proceed in accordance with Chapter 658 of the Hawaii Revised Statutes. The arbitrators in fixing the amount of damages to be paid to the occupier shall award him the amount which in their judgment shall fairly compensate the occupier for the damages he may suffer to his crops or improvements or to the surface or condition of his land caused by the mining or other incidental operations, including exploratory work, and a reasonable rental for the use of the surface of the land. If the arbitrators are unable, for any reason, to determine the amount of the damages, the arbitration hearing may be continued for a reasonable time to determine more accurately the amount of damages suffered. Nothing herein shall prevent the occupier from reopening the arbitration in the event of further damages.

6.2 Mining Lessee's Rights.

The lessee shall be entitled to use and occupy only so much of the surface of leased lands as may be required for all purposes reasonably incident to exploration for, drilling for, production and marketing of geothermal resources and associated by-products produced from the leased lands, including the right to construct and maintain thereon all works, buildings, plants, waterways, roads, communication lines, pipelines, reservoirs, tanks, pumping stations or other structures necessary to the full enjoyment and development thereof, consistent with an approved Plan of Operation and amendments thereto, as provided in Rules 7.2 and 7.3.

6.3 General Conditions.

a. Use of State lands under the jurisdiction and control of the Board are subject to the supervision of the Board. Use of State lands under the control of other State agencies are subject to the supervision of the appropriate State agency consistent with these rules.

b. The Board reserves the right to lease, sell or otherwise dispose of the surface of State lands embraced within a mining lease, insofar as said surface is not necessary for use by the lessee in his exploration, development and production of the geothermal resources and associated by-products, but any lease, sale, or other disposal of surface rights if made, shall be subject to the rights of the mining lessee.

c. The Chairman shall be permitted at all reasonable times to go in and upon the leased lands and premises, during the term of a mining lease, to inspect the operations and the products obtained from the leased lands and to post any notice that the Board may deem fit and proper.

d. During operations, the lessee shall regulate public access and vehicular traffic to cause the least practicable interference with the use of the surface of the land and to protect human life, wildlife, livestock and property from hazards associated with the operations. For this purpose, the lessee shall provide warnings, fencing, flagmen, barricades, well and hole coverings and other safety measures as appropriate. Restrictions on access must be approved by the Chairman as part of the Plan of Operations and amendments thereto required under Rule 7.2.

e. Lessee shall take all necessary steps in the exploration, development, production and marketing of geothermal resources to avoid a threat to life or property or posing an unreasonable risk to subsurface, surface or atmospheric resources.

RULE NO. 7 GEOHERMAL MINING OPERATIONS UNDER THE LEASE

7.1 General Terms.

a. The operator under a lease shall conduct all operations in a manner that will conform to the most prudent practices and engineering principles in use in the industry. Operations shall be conducted in such a manner as to protect the natural resources including without limitation, geothermal resources, and to obtain efficiently the maximum ultimate recovery of geothermal resources consistent with other uses of the land with minimal impact on the environment. Operations shall be conducted with due regard for the safety and health of employees. The operator shall promptly remove from the leased lands or store, in an orderly manner, all scraps or other materials not in use and shall notify the Chairman of all accidents within 24 hours and submit a written report within 30 days.

b. The operator of a lease shall comply with all of the requirements, laws, rules and regulations of the United States, the State of Hawaii and the appropriate county pertaining to the use of said premises or conduct of the operation.

c. The operator of a lease shall take all reasonable precautions to prevent waste and damage to any natural resources including vegetation, forests, and fish and wildlife; injury or damage to persons, real or personal property; and degradation of the environment. The Chairman may inspect lessee's operations and issue such orders as are necessary to accomplish these purposes.

d. The Chairman is authorized to shut down any operation which he determines are unsafe or are causing or can cause pollution of the natural environment or waste of natural resources including geothermal resources upon failure by lessee to take timely, corrective measures previously ordered by the Chairman.

e. The lessee shall designate a local representative empowered to receive service of civil or criminal process, and notices and orders of the Chairman issued pursuant to these rules as prescribed in Rule 8.2.

f. In all cases where exploration or mining operations are not to be conducted by the lessee but are to be conducted under an approved operating agreement, assignment or other arrangement, a designation of operator shall be submitted to the Chairman prior to commencement of operations. Such a designation will be accepted as authority of the operator or his local representative to act for the mining lessee and to sign any papers or reports required under these rules. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the Chairman.

g. The lessee shall commence mining operations on the leased lands within three years from the date of execution of the lease or upon the expiration of any research period approved by the Board under Sec. 182-7(3), except that if such operator holds more than one lease this provision shall not apply to the other leases so long as the lessee is actively and on a substantial scale engaged in mining operations on at least one such lease. Notwithstanding the above, the Board may impose more stringent development requirements as to any particular lease.

7.2 Plan of Operations Required.

A lessee shall not commence operations of any kind other than casual use as described in Rule 2.1 prior to submitting to the Chairman for Board approval of a Plan of Operations. Such a plan shall include:

- a. The proposed location and elevation above sea level of derrick, proposed depth, bottom hole location, casing program, proposed well completion program and the size and shape of drilling site, excavation and grading planned, and location of existing and proposed access roads.
- b. Existing and planned access, access controls and lateral roads.
- c. Location and source of water supply and road building material.
- d. Location of camp sites, air-strips and other supporting facilities.
- e. Other areas of potential surface disturbance.
- f. The topographic features of the land and the drainage patterns.
- g. Methods for disposing of well effluent and other waste.

- h. A narrative statement describing the proposed measures to be taken for protection of the environment, including, but not limited to the prevention or control of (1) fires, (2) soil erosion, (3) pollution of the surface and ground water, (4) damage to fish and wildlife or other natural resources, (5) air and noise pollution, and (6) hazards to public health and safety during lease activities.
- i. A geologist's preliminary survey report on the surface and sub-surface geology, nature and occurrence of the known or potential geothermal resources, surface water resources, and ground water resources.
- j. All pertinent information or data which the Chairman may require to support the Plan of Operations for the utilization of geothermal resources and the protection of the environment.
- k. Provisions for monitoring deemed necessary by the Chairman to insure compliance with these rules for the operations under the plan.
- l. The information required above for items (a) through (f) shall be shown on a map or maps of 1:24,000 scale or larger, when required by the Board.

The Board shall either approve, subject to the requirements of Chapter 343 entitled Environmental Quality Commission and Environmental Impact Statements of the Hawaii Revised Statutes and to any terms or conditions it may specify at its discretion, or disapprove the Plan of Operation within sixty (60) calendar days after the date of receipt of the plan. If the Board disapproves the Plan of Operations it shall notify the applicant and such decision may be appealed as provided in Rule 15.

7.3 Amendments to Plan of Operations.

After completion of all operations authorized under any previously approved Plan of Operation, the lessee shall not begin to redrill, repair, deepen, plug back, shoot, or plug and abandon any well, make casing tests, alter the casing or liner, stimulate production, change the method of recovering production, or use any formation or well for brine or fluid injection until he has submitted to the Chairman in writing a new or amended Plan of Operation and has received written approval from the Chairman. However, in an emergency a lessee may take action to prevent damage without receiving prior approval from the Chairman, but in such cases the lessee shall report his action to the Chairman as soon as possible.

7.4 Drilling Operations.

a. Upon commencement of drilling operations, the lessee shall mark each drilling site and each completed well site in a conspicuous place with his name or the name of the operator, the lease number and the number of the well. The lessee shall take all necessary means and precautions to preserve these markings.

b. The lessee shall diligently take all necessary precautions to keep all wells under control at all times; utilize trained and competent personnel; utilize properly maintained equipment and materials; and use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area.

c. When necessary or advisable, the Chairman shall require that adequate samples be taken and tests or surveys consistent with industry practices be made without cost to the State of Hawaii, to determine the identity and character of geologic formations; the quantity and quality of geothermal resources; pressures, temperatures, rate of heat and fluid flow; and whether or not operations are being conducted in the best interest of the public.

7.5 Waste Prevention, OffSet Wells and Geothermal By-Products.

a. All mining leases shall be subject to the condition that the lessee will, in conducting his exploratory development and producing operations, use all reasonable precautions to prevent waste and conserve and provide for optimum use of geothermal resources and other natural resources found or developed in the leased lands.

b. If any waste of geothermal resources or by-products result from the willful misconduct or negligence of the operator or if the operator fails to take corrective action within a reasonable time after being notified in writing by the Chairman, the Board shall determine the value of such loss or waste and the compensation due to the Board, using the method for computing royalties set out in Rule 3.13(b) and (c). Payment for such losses will be paid when billed. The Board's determination of the value of the waste may be appealed as provided in Rule 15.

c. In the event any well located on other than State or reserved land is draining geothermal resources in commercial quantities from any land leased from the State, the Board may notify the lessee in writing to drill an offset well thereto, and within one hundred twenty (120) days from the date of such notice or such additional time as may be allowed by the Chairman, the lessee shall commence operations for the drilling of an offset well on the leased land to the same zone as that zone from which such well is producing geothermal resources or shall unitize with the well that is draining State land or pay to the State compensatory royalty. For the purpose of this section an offset well shall mean a well which a reasonably prudent geothermal operator would drill under similar circumstances. Otherwise, there shall be no obligation to unitize or pay compensatory royalty. To the extent provided by law, the Board may require unitization of leases and lands involved.

b. The lessee shall diligently take all necessary precautions to keep all wells under control at all times; utilize trained and competent personnel; utilize properly maintained equipment and materials; and use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area.

c. When necessary or advisable, the Chairman shall require that adequate samples be taken and tests or surveys consistent with industry practices be made without cost to the State of Hawaii, to determine the identity and character of geologic formations; the quantity and quality of geothermal resources; pressures, temperatures, rate of heat and fluid flow; and whether or not operations are being conducted in the best interest of the public.

7.5 Waste Prevention, OffSet Wells and Geothermal By-Products.

a. All mining leases shall be subject to the condition that the lessee will, in conducting his exploratory development and producing operations, use all reasonable precautions to prevent waste and conserve and provide for optimum use of geothermal resources and other natural resources found or developed in the leased lands.

b. If any waste results from the willful misconduct or negligence of the operator or if the operator fails to take corrective action within a reasonable time after being notified in writing by the Chairman, the Board shall determine the value of production accruing to the Board and the compensation due to the Board where there is loss through such waste as reimbursement for such loss, using the method for computing royalties set out in Rule 3.13(b) and (c). Payment for such losses will be paid when billed. The Board's determination of the value of the production accruing to the Board may be appealed as provided in Rule 15.

c. In the event any well located on other than State or reserved land is draining geothermal resources in commercial quantities from any land leased from the State, the Board may notify the lessee in writing to drill an offset well thereto, and within one hundred twenty (120) days from the date of such notice or such additional time as may be allowed by the Chairman, the lessee shall commence operations for the drilling of an offset well on the leased land to the same zone as that zone from which such well is producing geothermal resources or shall unitize with the well that is draining State land or pay to the State compensatory royalty. For the purpose of this section an offset well shall mean a well which a reasonably prudent geothermal operator would drill under similar circumstances. Otherwise, there shall be no obligation to unitize or pay compensatory royalty. To the extent provided by law, the Board may require unitization of leases and lands involved.

d. Subject to lessee's right to surrender a mining lease, where the Board determines that production, use, or conversion of geothermal resources is susceptible of producing a by-product or by-products, including demineralized water contained in or derived from such geothermal resources and deemed suitable for beneficial use in accordance with the Hawaii Ground Water Use Act (Chapter 177), the Board may require substantial production or use thereof unless the Board determines that beneficial production or use would not be in the interest of conservation of natural resources, nor economically feasible or would not otherwise be in the public interest.

7.6 Protection of Other Resources.

a. The lessee shall remove any derrick, equipment and/or facilities within sixty (60) days after lessee has ceased making use thereof in its operations.

b. All permanent operating sites shall be landscaped or fenced so as to screen them from public view. Such landscaping or fencing shall be approved in advance by the state and kept in good condition.

c. All drilling and production operations shall be conducted in such manner as to eliminate as far as practicable dust, noise, vibration, or noxious odors. Operating sites shall be kept neat, clean and safe. Drilling dust shall be controlled to prevent widespread pollution. The determination as to what is detrimental rests solely with the Chairman.

d. Wastes shall be discharged in accordance with all Federal, State and local requirements.

e. Any operation disturbing the soil surface, including road building, construction, and movement of heavy equipment in support of or relating to specific geothermal exploration or development activities shall be conducted in such a manner as will not result in unreasonable damage to trees and plant cover, soil erosion, or degradation of water resources.

f. Existing roads, except public roads, and bridges on or serving the area under lease shall be maintained in a condition equal to or better than that before use. New roads and bridges shall be located, constructed, and maintained in accordance with the appropriate county requirements.

g. Marketable timber on State or reserved lands which are damaged, destroyed, or used shall be compensated for at fair market value to the owners of the land. Borrow pit material shall not be obtained from State or reserved lands without permission and payment of market value to the owner.

h. Improvements, structures, telephone lines, trails, ditches, pipelines, water developments, fences, permanent improvements and crops of the owners shall be protected from damage and repaired or replaced when damaged or monetary compensation paid to the owners for such damage.

i. Access to drilling or production sites by the public shall be controlled by the lessee to prevent accidents or injury to persons or property.

j. Areas cleared and graded for drilling and production facility sites shall be kept to a reasonable number and size, and be subject to Board approval.

k. Lessee shall conduct its operations in a manner which will not interfere with the right of the public to use public lands and waters.

7.7 Suspension of Operations.

In the event of any disaster and pollution, or likelihood of either, having or capable of having a detrimental effect on public health; safety; welfare; or the environment caused in any manner or resulting from operations under a lease; the lessee shall suspend any testing, drilling and production operations, except those which are corrective, or mitigative, and immediately and promptly notify the Chairman. Such drilling and production operations shall not be resumed until adequate corrective measures have been taken and authorization for resumption of operations has been made by the Chairman.

7.8 Diligent Operations Required.

The lessee shall be diligent in the exploration or development of the geothermal resources on the leased lands. Failure to perform diligent operations may subject the lease to termination by the Board. Diligent operations mean exploratory or development operations on the leased lands, including without limitation geochemical surveys, heat flow measurements, core drilling, or drilling of a well for discovery, evaluation, or production of geothermal resources.

7.9 Records and Reports.

a. Lessee shall at all times maintain full and accurate records of production and payments relating to lessee's operations and activities upon and in connection with said leased lands. All books and records of lessee pertaining to or necessary in determining royalty payments shall be open to inspection at all reasonable times by the authorized representatives of the Department.

b. The lessee shall furnish to the Board for its confidential use, copies of all physical and factual exploration results, logs and surveys which may be conducted, well test data, and other data resulting from operations under the lease. Such information shall be kept confidential as a trade secret for a period of one year from date of receipt, or longer at the discretion of the Board.

7.10 Restoration of Premises.

Upon the revocation, surrender or expiration of any mining lease, the lessor or surface owner may require the lessee to restore the lands covered by said lease to their original condition insofar as it is reasonable to do so within 90 days thereof, except for such roads, excavations, alterations or other improvements which may be designated for retention by the surface owner, the Board or any State agency having jurisdiction over the affected lands. When determined by the Board or such State agency, cleared sites and roadways shall be replanted with grass, shrubs or trees by the lessee.

PART II - DRILLING FOR GEOTHERMAL RESOURCES

RULE NO. 8 GENERAL

8.1 Purpose.

This Part shall apply to all lands within the State, including privately owned lands.

All wells drilled in the State of Hawaii for the exploration, discovery, evaluation, development, production, utilization or injection of geothermal resources and by-products shall be subject to Part II of these Regulations which are statewide in application and shall be drilled, operated, and maintained or abandoned in such a manner as to prevent waste, conserve and provide for optimum use of geothermal resources, to prevent degradation of the environment, surface and ground, and other natural resource and to prevent injury to life and property.

8.2 Designation of Agent.

Any person who has drilled, is drilling, or proposes to drill any geothermal well shall designate on forms provided by the Department an agent who shall be a resident of the State of Hawaii and upon whom may be served all orders, notices, and processes of the Department or any court of law. Every person so appointing an agent shall, within five days after the termination of any such agency, notify the Chairman in writing of such termination, and unless operations are discontinued, shall appoint a new agent. All changes in the address of an agent must be recorded with the Chairman within five days of the change of the address.

RULE NO. 9 DRILLING OF GEOTHERMAL WELLS

9.1 Applications for Permit to Drill, Modify, Modify Use, or Abandon Wells; Permits.

Prior to the drilling, modifying, modifying use, or abandoning of any well, the operator of such well shall file with the Chairman an appropriate application for a permit to perform any such work and shall obtain approval thereof. Each application for a permit shall be made on forms provided by the Department and shall contain the following:

- a. Name, signature and address of the applicant, the owner of the mining rights and the land owner if the applicant is not the land owner.
- b. The number or other designation by which the well shall be known. Such number or designation shall be subject to the Chairman's approval.
- c. A plot plan showing the Tax Map Key, site elevation, and well location referenced to established property corners. A survey by a Hawaii licensed surveyor may be required by the Department, if deemed necessary.

d. A statement by applicant of the purpose and extent of the proposed work and an estimate of the depths between which discovery, production, injection, or plugging will be attempted.

e. A description of the proposed drilling and casing program; and a plan or drawing showing the proposed work and vertical section of the well.

f. A statement by applicant agreeing to file a bond meeting the requirements of Rule 9.4 with the Chairman within 10 calendar days after notification that the application has been approved.

g. A statement by applicant to perform the work and thereafter to operate and maintain the well in accordance with these Regulations and all other Federal, State and County requirements.

Applications for a permit shall be reviewed and acted upon by the Chairman within 60 calendar days after receipt.

Permits shall be valid for a period of 365 calendar days from date of issuance, but may be renewed for an additional period of 180 calendar days at the discretion of the Chairman.

A permit may be suspended or revoked by the Chairman. If it appears that any drilling or well work for which a permit has been issued is not being done in accordance with conditions of the permit or these Regulations, the Chairman shall notify the permittee to appear before him at a time and place designated in the Notice to show cause why the permit should not be suspended or revoked and the well be plugged and abandoned or put in proper condition by the permittee. The Notice shall state the grounds for suspension or revocation. After the hearing, the Chairman shall give his order as to revocation, suspension or continuation of the permit. The order shall be subject to appeal as provided in Rule 15.

9.2 Supplementary Applications.

A Supplementary Application must be filed with the Chairman if there is any contemplated change in the original approved application. Written approval of such change must be received from the Chairman before such change of work is started. In an emergency or when deemed necessary by the Chairman, the Chairman may give verbal approval to the operator to carry out the intent and purpose of these drilling Regulations.

9.3 Filing Fees.

Each application for a permit to drill, modify, modify use or abandon a well shall be accompanied by a non-refundable filing fee in the amount of \$100.

9.4 Bonds.

a. Any person who engages in the drilling, redrilling, deepening, maintaining, operating or abandoning of any well shall file with the Chairman prior to such activity, an indemnity bond in the amount set by the Board to protect the interests of the State, but in no case less than \$50,000 for each

well or a blanket bond of \$250,000 for any number of wells. The amount of bond set by the Board shall include the cost of plugging and abandoning such well or wells in accordance with Rule 12 should it be necessary. The bond shall be executed by such person, as principal, and by a surety company qualified to do business in the State of Hawaii, as surety, conditioned that the principal named in the bonds shall faithfully comply with these Regulations. The bonds shall inure to and indemnify the State and surface owners against all losses, charges, expenses and claims for damages or injuries caused or resulting from the drilling and operation of the wells.

b. Bonds shall remain in force for the life of the well or wells and may not be released until the well or wells are properly abandoned as determined by the Chairman or another valid bond is substituted therefor. Any person who acquires the ownership or operation of any well or wells shall within five days after acquisition file with the Chairman a new indemnity bond or a consent by the surety to the change in principal under the existing bond.

9.5 Set-Back and Well Spacing

a. Any well drilled for the discovery and/or production of geothermal resources or for injection of geothermal resources shall be located more than 100 feet from the outer boundary of the parcel of land on which the well is situated, or more than 100 feet from a public road, street, or highway dedicated prior to the commencement of drilling unless modified by the Chairman upon request. Where several contiguous parcels of land under one or more ownerships are operated as a single geothermal resources operating unit, the term "outer boundary line" means the outer boundary line of the lands included in such a unit.

b. The Chairman shall approve proposed well spacing programs or prescribe such modifications to the programs as it deems necessary for proper development and conservation of geothermal resources, giving consideration to such factors as, but not limited to, topographic characteristics of the area, hydrologic, geologic, and reservoir characteristics of the area, the number of wells that can be economically drilled to provide the necessary volume of geothermal resources for the intended use, minimizing well interference, unreasonable interference with multiple use of lands, and protection of the environment.

9.6 Directional Drilling.

Where the surface of a parcel of land is unsuitable for drilling, a directionally drilled (other than a vertical direction) well may be located upon another parcel which may or may not be contiguous. The location of such a well shall be not less than 25 feet from the outer boundary of the parcel on which it is located and not less than 25 feet from an existing street or road. The production or injection interval of such a well shall be not less than 100 feet from the outer boundary of the parcel into which it is drilled. Directional well surveys shall be filed with the Department for all wells directionally drilled.

No well shall be intentionally deviated from the vertical without the Chairman's approval.

9.7 Casing and Cementing Requirements.

a. General. All wells shall be cased in such a manner as to protect and to prevent or minimize damage to the environment, ground water resources, geothermal resources, life, health and property. The permanent well head completion equipment and all casing strings reaching the surface shall provide for adequate well pressure control, operational safety, and protection of all natural resources. Department specifications for casing strings shall be determined on a well-to-well basis. All casing strings reaching the surface shall provide adequate anchorage for blowout-prevention equipment, hole pressure control and protection for all natural resources. The casing requirements described below are general and should be used as guidelines in submitting proposed casing programs required to be filed with Applications for Permit.

b. Conductor Pipe. Conductor pipe shall be installed to a depth of a minimum of 50 feet and a maximum of 150 feet. In special cases the Chairman may allow conductor pipe to be run and cemented at deeper depths. The annular space between the hole and pipe shall be cemented solid to the surface.

c. Surface Casing. Surface casing shall be installed to provide for control of formation fluids, for protection of ground water resources and for anchorage of blowout-prevention equipment. All surface casing shall be cemented solid to the surface.

Surface casing shall be set to a minimum depth of ten percent of the proposed total depth of the well or 500 feet, whichever is greater. If useable basal ground water is present or reasonably suspected to exist in the area, the depth of the surface casing shall be approved by the Chairman. If subsurface geological, hydrological, or geothermal conditions are known in or in the vicinity of the area to be drilled, such conditions shall be used in determining and approving the depth of surface casing. A second string of surface casing may be required if the first string has not been cemented through a sufficient series of low permeability, competent rock formations and either a rapidly increasing thermal gradient or rapidly increasing formation pressures are encountered.

d. Intermediate Casing. Intermediate casing shall be required for protection against anomalous pressure zones, cave-ins, washouts, abnormal temperature zones, uncontrollable lost circulation zones or other drilling hazards. Intermediate casing strings shall be cemented solid to the surface.

e. Production Casing. Production casing may be set above or through the producing or injection zone and cemented above such zones. Sufficient cement shall be used to exclude overlying formation fluids from the zone, to segregate zones and to prevent movement of fluids behind the casing into zones that contain ground water. Production casing shall either be cemented solid to the surface or lapped into intermediate casing, if installed. If the production casing is lapped into an intermediate string, the casing overlap shall be at least 50 feet, the lap shall be cemented solid and the lap shall be pressure tested to ensure the integrity of the lap.

In order to reduce casing corrosion, production casing used to produce corrosive brine reservoirs shall be of the same nominal inside diameter from the shoe of the casing to the ground surface unless waived by the Chairman.

f. Cement. All cement used in cementing the various types of casing required herein shall contain a high temperature resistant admix, unless this cement requirement is waived by the Chairman in accordance with the particular circumstances existing in the well or the area.

9.8 Mud Return Temperature Logging.

The temperature of the return drilling mud shall be monitored continuously during drilling of the surface casing portion of the drill hole. Either a continuous temperature monitoring device shall be installed and maintained in working condition, or the temperature shall be read manually. In either case, return mud temperatures shall be entered into the log book after each joint of pipe has been drilled down (about every 30 feet).

9.9 Electric Well Logging.

All wells, except observation wells, shall be logged with an induction electrical log, or other approved log from total depth to the bottom of the conductor pipe before installing casing, except in the case where air is used as the drilling medium. This requirement may vary from area to area, depending upon the amount of subsurface geological or hydrological data available, and may not be required from total depth of the well under certain conditions, subject to the approval of the Chairman.

9.10 Blowout-Prevention Equipment.

a. General. Blowout-prevention equipment (BOPE) capable of shutting-in the well during any operation shall be installed on the surface casing tested, and maintained ready for use at all times. As deemed appropriate, BOPE pressure tests may be observed by the Chairman or his designated representative on all exploratory wells prior to drilling out the shoe of the surface casing. The decision to require and observe BOPE pressure tests on other types of wells shall be made on a well-to-well basis. In any case, the Chairman must be contacted well in advance of a scheduled pressure test to allow time for travel to the well site to witness the test.

BOPE installations shall include high temperature-rated packing units and ram rubbers if available and shall have a minimum working-pressure rating equal to or greater than the lesser of: (1) a pressure equal to the product of the depth of the BOPE anchor string in feet times one (1) psi per foot; (2) a pressure equal to the rated burst pressure of the BOPE anchor string; or (3) a pressure equal to 2000 psi.

b. BOPE Classes. The requirements for blowout-prevention equipment shall be subject to review and modification by the Chairman and the following standards are given as guidelines for preparation of minimum blowout-prevention programs.

(1) NO BOPE: No BOPE is required for known shallow, low temperature, low pressure areas where down-hole water temperatures are less than 100 degree Celsius at depths less than 500 feet or where temperature and pressures are unknown and the proposed depth of drilling is less than 500 feet.

(2) CLASS 2M BOPE (API CLASS 2M-A or 2M-RE): Required for low pressure areas where known temperatures are above 100 degree Celsius at depths less than 2,000 feet, or where subsurface temperatures and pressures are unknown and the proposed depth of drilling is less than 2,000 feet. Equipment shall include: an annular BOPE or pipe-ram/blind-ram BOPE with minimum working-pressure ratings of 1,000 psi installed on the surface casing so that the well can be shut-in at any time; hydraulic and/or manual actuating system; kelly cock; a fill-up line installed above the BOPE; a kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and a blow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner so as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(3) CLASS 3M BOPE (API CLASS 2M-RSRA or EQUIVALENT): Required for medium pressure areas where subsurface pressures are less than 1000 psi or where pressures are unknown and the proposed total depth of the well is greater than 2000 feet. Equipment shall include: annular BOPE and pipe-ram/blind-ram BOPE with a minimum working-pressure rating of 2,000 psi installed on the surface casing so that the well can be shut-in at any time and with a double-ram preventer having a mechanical locking device; a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high pressure auxiliary backup system equipped with dual controls, one at the driller's station and one at least 50 feet away from the well head; kelly cock and standpipe valve; a fill-up line installed above the BOPE; a kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and a blow-down line fitted with two valves installed below the BOPE with blow-down line directed in such a manner as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(4) CLASS 1A BOPE: Required in areas where dry steam is known to exist and/or formation pressures are less than hydrostatic and air is used as the drilling medium. Equipment shall include: a rotating-head installed at the top of the BOPE stack; a pipe-ram/blind-ram BOPE, with a minimum working-pressure rating of 1,000 psi, installed below the rotating-head so that the well can be shut-in at any time; a banjo-box steam diversion unit installed below the double-ram BOPE, fitted with a muffler capable of lowering sound emissions to within acceptable standards; a blind-ram BOPE, with a minimum working-pressure rating of 1,000 psi, installed below the banjo-box so that the well can be shut-in while removing the rotating-head during bit changes; a gate valve required on final casing string to be cemented back to surface, with a minimum working-pressure rating of 300 psi, installed below the blind-ram so that the well can be shut-in after the well has been completed, prior to removal of the BOPE stack; all ram-type BOPE shall have a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high-pressure backup system; dual control stations for hydraulic backup system, one at the driller's station and the other at least 50 feet away from the well head; kelly cock and standpipe valves; a kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and a blow-down line fitted with two valves installed below the BOPE. This line shall be directed so as to minimize any safety hazard to personnel. If any portion of a well is drilled using mud, Class 2M BOPE shall be installed on the surface casing so that the well can be shut-in at any time

9.11 Well Completion.

A well is considered to be completed 30 days after drilling operations have ceased and the well is capable of producing a geothermal resource, or 30 days after it has commenced to produce a geothermal resource, unless drilling operations are resumed before the end of the 30-day period. For the purpose of filing well records, the time limit of 60 days begins either when, the well commences production or injection, the drilling operations are suspended for more than 30 days, or the well is abandoned.

9.12 Well Tests.

The Chairman shall require such well tests or remedial work as in his judgment are necessary to prevent and minimize damage to life, health, property, natural resources, geothermal resources, ground water resources, and the environment. Types of tests may include casing tests, cementing tests, directional tests and equipment tests.

All casing strings shall be pressure tested after cementing and before commencing any other operations on the well. Minimum casing test pressure shall be approximately one-third of the manufacturer's rated internal yield pressure except that the test pressure shall not be less than 600 pounds per square inch and need not be greater than 1500 pounds per square inch. In cases where combination strings are involved, the above test pressures shall apply to the lowest pressure-rated casing used. Test pressures shall be applied for a period of 30 minutes. If a drop of more than ten percent of the test pressure should occur, the casing or cement job shall be considered defective and corrective measures shall be taken before commencing any further operations on the well.

If the cementing of any casing appears to be defective, or if the casing in any well appears to be defective or corroded or parted, or if there appears to be any underground leakage for whatever other reason, which may cause or permit underground waste, the operator shall proceed with diligence to use the appropriate method or methods to eliminate such hazard. If such hazard of waste cannot be eliminated, the well shall be plugged and abandoned in accordance with a plugging program approved by the Chairman.

All wells shall be tested to determine the deviation from the vertical at maximum intervals of 500 feet or less.

RULE NO. 10 WELL MODIFICATION FOR INJECTION

10.1 Injection Wells.

Injection wells are those wells used for disposal of geothermal waste fluids, for the augmentation of geothermal reservoir fluids, for maintenance of reservoir pressures, or for any other purpose authorized by the Chairman. New wells may be drilled or old wells may be modified for such injection purposes.

10.2 Permit Required.

Prior to modification of existing wells for injection purposes, an appropriate Application for Permit must be filed with the Chairman together with filing fee, as required in Rule 9.1. Modification work shall not commence until a permit has been issued by the Chairman.

10.3 Surveillance of Injection Wells.

Surveillance of injection wells shall be necessary in order to establish that all injection effluent is confined to the intended zone of injection. When an owner or operator proposes to drill a new well or modify an existing well he shall be required to demonstrate to the satisfaction of the Chairman that the casing has complete integrity by approved test methods.

To establish the integrity of the annular cement above the shoe of the casing, the operator shall make sufficient surveys, within 30 days after injection is started into a well, to demonstrate that all the injected fluid is confined to the intended zone of injection. Thereafter, such surveys shall be made at least every two years, or more often when ordered by the Chairman. All such surveys shall be witnessed by the Chairman.

After the injection well has been put into service, the Chairman may visit the well site periodically. At these times, surface conditions shall be noted and if any unsatisfactory conditions exist, the operator shall be notified of needed remedial work. If this required work is not performed within 90 days, the permit issued for such well by the Chairman shall be rescinded. If it is determined that damage is occurring, the Chairman may order that the repair work be done immediately.

Injection pressures shall be recorded and compared with the pressure reported on the appropriate forms. Any discrepancies shall be rectified immediately by the operator. A graph of pressures and rates versus time shall be maintained by the operator. Reasons for anomalies shall be promptly ascertained. If these reasons are such that it appears damage is being done, the permit issued by the Chairman may be rescinded, and injection shall cease.

At the discretion of the Chairman, when an injection well has been left idle for a period of two years or longer, the operator shall be informed by letter that the permit issued for use of the well for injection purposes has been rescinded. In the event the operator intends again to use the well for injection purposes, he shall be required to file a new Application for Permit and to demonstrate to the satisfaction of the Chairman by means of surveys that the injected fluids will be confined to the intended zone of injection.

RULE NO. 11
WELL OPERATION AND MAINTENANCE

All wells and their appurtenances such as well head, separators, pumps, mufflers, scrubbers, manifolds, valves and pipelines shall be operated and maintained by the operator in good working condition in order to prevent unacceptable pollution, waste and the loss of or damage to life, health, property, natural resources, and environment. The well head and appurtenances of all wells shall meet a test pressure of at least one and a half times the calculated or known pressure of the geothermal reservoir tapping or to be tapped by the well.

Periodic corrosion surveillance of any well and appurtenances may be conducted by the Chairman or his authorized representative and any leakage, waste, or hazard shall be promptly corrected by the operator.

The operator of any well shall notify the Chairman of any blowout, break, leak or spill of any well or appurtenant facilities. The notification to the Chairman shall consist of a written report submitted within ten days after discovery of the incident.

The Chairman shall notify the operator of any well not being operated or maintained in accordance with these Regulations to take whatever steps may be necessary to remedy the defect at the operator's expense within the period of time specified in such Notice. If the operator fails to comply with such Notice and remedy the defect within the specified period, the Chairman may do such work as may be necessary to plug and abandon the well or put it in proper condition at the expense of the operator or his surety and he may take necessary action to enforce the penalty provided in these Regulations.

RULE NO. 12
WELL ABANDONMENT

12.1 Notice of Intent to Abandon; Permit; Filing Fee.

The operator of any well proposed to be abandoned must file with the Chairman an Application for Permit to Abandon, prior to said abandonment. The operator's proposed plans for abandonment shall be subject to approval and revision prior to the issuance of a permit by the Chairman. Each such application to abandon a well shall be accompanied by a non-refundable filing fee of \$100.

12.2 General Requirements.

a. The operator of any well shall promptly plug and abandon any well that is deserted, not in use, is deemed not to be potentially useful, is wasting geothermal or ground water resources, or is irreparably damaged. No well shall be plugged and abandoned until the manner and method of plugging have been approved or prescribed by the Chairman.

b. Before any work is commenced to abandon any well, notice shall be given by the operator to the Chairman, which notice shall show the condition of the well and the proposed method of abandonment. Unless otherwise specified in the Plan of Operation, no well may be abandoned except as prescribed herein. However, the operator of a lease shall promptly plug and abandon any well that is deserted, not used or deemed useful by the Board. No well capable of producing in commercial quantities may be abandoned until receipt of written approval by the Chairman. Equipment shall be removed, and premises at the well site shall be restored as near as reasonably possible to its original condition immediately after plugging operations are completed on any well except as otherwise authorized by the Chairman. When drilling operations have been temporarily suspended drilling equipment shall not be removed from any well without taking adequate measures to close the well and protect subsurface resources. Upon failure of lessee to comply with any requirements under this rule, the Chairman is authorized to cause the work to be performed at the expense of lessee and the surety.

c. Good quality, heavy drilling fluid approved by the Chairman shall be used to replace any water in the hole and to fill all portions of the hole not plugged with cement.

d. Subsequent to plugging and abandonment operations in the hole, casings shall be cut off at least 6 feet below the surface of the ground, all concrete cellars and other structures shall be removed, and the surface location restored, as near as practicable, to original conditions.

e. A History of Geothermal Resources Well shall be filed within 60 days after completion of abandonment; except in the case of an exploratory well such report shall be filed within six months after abandonment.

f. Any bond or rider thereto covering the well shall remain in full force and effect until the well is properly abandoned and the surface properly restored. Written approval of the abandonment must be obtained from the Chairman before any bond is released.

12.3 Cementing Requirements.

a. Cement used to plug any well, except that cement or concrete used for surface plugging, shall be placed in the hole by pumping through drill pipe or tubing. Such cement shall contain a high temperature resistant admix, unless this requirement is waived by the Chairman in accordance with the particular circumstances existing in that well or area. All open annuli shall be filled solid with cement to the surface.

b. One hundred (100) lineal feet of cement shall be placed straddling the bottom of the conductor pipe and at the shoes of all casings.

c. Cement shall be placed solidly across geothermal zones and extending 100 lineal feet above and below such zones, whether in uncased or cased (perforated) hole, except as follows:

(1) One hundred (100) lineal feet of cement shall be placed straddling casing stubs and laps. If unable to enter casing stubs or laps, 100 lineal feet of cement shall be placed above the top of the stubs or laps.

(2) If casing is collapsed, etc., cement shall be placed solidly in geothermal zones or perforated sections of casing and extending 100 lineal feet above such zone or perforated section by squeezing with a retainer or braden head.

d. Fifty (50) lineal feet of cement shall be placed above the top of casing liners.

e. A surface plug consisting of a minimum of 50 lineal feet of neat cement or ready mix concrete shall be placed below the surface of the well.

f. Where a well has been drilled with air, a bridge plug may be placed at the deepest cemented casing shoe and the bridge plug shall be capped with a minimum of 200 lineal feet of cement.

RULE NO. 13 WELL RECORDS AND REPORTS

13.1 Well Records.

The operator of any geothermal well shall keep, or cause to be kept, a careful and accurate log, core record, and history of the drilling of the well, including lithology and depths of formations encountered; cores; water-bearing and geothermal heat-bearing strata and their depths, pressures and temperatures; and such other well surveys and logs of temperature, chemical, radioactive, and electrical characteristics of the well. These records shall be kept within the State of Hawaii in the local office of the operator or his designated agent and together with all other reports of the operator, shall be subject, during business hours, to the inspection of the Chairman. The Board may also require such additional data or reports relating to production or utilization of geothermal resources and by-products as may appear to be necessary or desirable, either generally or specifically, for the prevention of waste and the optimum use of geothermal, water and other natural resources of the State.

13.2 Reports to be Filed.

Within six months after the completion of any well or completion of any deepening, redrilling, plugging, altering or abandonment work, the operator shall file with the Department of Land and Natural Resources in Honolulu, Hawaii, the following well reports on forms provided by the Department:

a. Drilling Log and Core Report. The Drilling Log and Core Report shall show the lithologic characteristics and depths of formations encountered, the depths and temperatures of ground water-bearing and geothermal resources-bearing strata, the temperatures, chemical compositions, and other chemical and physical characteristics of fluids encountered from time to time, so far as ascertained. The report shall show the depth, lithologic character and fluid content of cores obtained, so far as determined.

b. Well History Report. The Well History Report shall describe in detail the chronological order on a daily basis all significant operations carried out and equipment used and shall be submitted upon completion of drilling, testing, completion, recompletion and abandonment of a well.

c. Well Summary Report. The Well Summary Report shall show data pertinent to the condition of a well at the time of completion of work done. Well locations shown on this form shall be surveyed by a licensed surveyor.

d. Supplementary Notice. Reports on any other operations not specifically mentioned herein which affect the previous reported status of a well shall be reported on the Supplementary Notice form.

e. All reports shall be the property of the State with the right to utilize the same.

13.3 Monthly Production and Injection Reports to be Filed.

The operator of any well which is producing geothermal resources or by-products or is being used for injection purposes shall file with the Chairman on or before the 30th day after the end of each month a report on the amount of geothermal resources produced, sold and used, and the amount of fluid injected for that month as the case may be.

RULE NO. 14 ENVIRONMENTAL PROTECTION

a. Protection of the environment includes responsibility of the operator of any well to: conduct exploration, drilling, and development operations in a manner deemed necessary by the Chairman to provide maximum protection of the environment; rehabilitate disturbed lands; take all precautions deemed necessary by the Chairman to protect the public health and safety; and conduct operations in accordance with the intent and objectives of these Regulations and all other applicable Federal, State, and County environmental legislation.

b. Adverse environmental impacts from geothermal-related activity shall be prevented or mitigated through enforcement of these regulations and of all other applicable Federal, State, and local standards, and the application of existing technology. Inability to meet these environmental standards or continued violation of environmental standards by any well operator after due notification, may be construed as grounds for the Chairman to order a suspension of well operations.

c. The operator of any well shall be responsible for monitoring of readily identifiable localized environmental impacts associated with specific activities that are under his control. Monitoring of environmental impacts may be conducted by the use of aerial surveys, inspections, periodic samplings, continuous records, or by such other means or methods as required by the Chairman. Due to the differing natural environmental conditions among geothermal areas, the extent and frequency of such monitoring activities will be approved by the Chairman on an individual well basis. In the event the Chairman determines that the degree and adequacy of existing environmental protection regulations in certain areas are insufficient, the Chairman may establish additional and more stringent requirements.

The operator of any well shall provide for acquisition of adequate environmental baseline data prior to submission of a plan for production. Techniques and standards to be used by the operator for meeting these requirements shall be subject to the approval of the Chairman.

d. Aesthetics. The operator of any well shall reduce visual pollution, where feasible, by the careful selection of sites for operations and facilities. The design and construction of facilities shall be conducted in a manner such that the facilities will blend into the natural environmental setting of the area by the appropriate use of landscaping, vegetation, compatible color schemes, and minimum profiles. Native plants or other compatible vegetation shall be used, where possible, for landscaping and revegetation.

e. Land Use and Reclamation. Drilling and operating plans shall be designed so that such operations will result in the least disturbance of land, water, and vegetation. Existing roads shall be used where feasible. Entry upon certain environmentally fragile land areas may be either seasonally restricted or restricted to special vehicles or transportation methods which will minimize disturbance to the surface or other resources as specified by the Chairman.

Plans for drilling operations shall provide for the reclamation and revegetation of all disturbed lands in a manner approved by the Chairman. Land reclamation may include preparation and seeding with prescribed wildlife food and plant cover or improved and acceptable substitutes thereof which will equal or enhance the food values for indigenous wildlife species and domesticated animals. Temporary fencing for such reclaimed areas may be required to facilitate restoration thereof.

f. Slope Stability and Erosion Control. Operations shall be conducted in such a manner so as to minimize erosion and disturbance to natural drainage. The operator of any well shall provide adequate erosion and drainage control to prevent sediments from disturbed sites from entering water courses for soil and natural resource conservation protection.

g. Biota. The operator of any well shall conduct all operations in such manner as to provide reasonable protection of fish, wildlife, and natural habitat. The operator shall take such measures as are necessary for the conservation of endangered and threatened species of flora and fauna.

h. Cultural Resources Preservation. The operator of any well shall exercise due diligence in the conduct of his operations to protect and preserve significant archaeological, historical, cultural, paleontological, and unique geologic sites.

Previously unknown sites discovered during any operations shall be immediately reported to the Chairman, and operations on that site shall cease until said site can be assessed for its archaeological value.

i. Air and Noise Pollution; Effluent Disposal. The operator of any well shall comply with all applicable Federal, State, and local standards with respect to air, land, water, and noise pollution, and the disposal of liquid, solid, and gaseous effluent. Immediate corrective action approved or prescribed by the Chairman shall be taken in all cases where pollution has occurred or abatement is deemed necessary. The disposal of well effluents shall be done in such a manner as to not constitute a hazard to surface or ground water resources.

j. The operator of any well shall design, plan, and conduct all well drilling, casing and cementing operations in such a manner as provide for protection of all useable ground water resources from exhaustion, depletion, waste, pollution, salt water encroachment or the threat thereof.

PART III - OTHER PROVISIONS

RULE NO. 15 APPEAL

Unless provided otherwise, any person adversely affected thereby may appeal to the circuit court from any ruling of the Board pursuant to Chapter 91, HRS.

RULE NO. 16 PENALTIES

Any person violating Part II of these regulations shall be fined not more than \$500 for each offense; and where continuance of waste, degradation, or damage of resources, is immediately controllable, each day's continuance of the same, after written notice shall constitute a separate offense; provided, that when the continuance of the waste, degradation, or damage of resources is not under immediate control, as where recasing or sealing is necessary, each day's continuance of the same shall constitute a separate offense after 60 days have elapsed from the time of receiving written notice to prevent waste. For violations under Rule 13 each day's continuance of the same shall constitute a separate offense after 30 days have elapsed from the time of written notice of violations.

RULE NO. 17 INJUNCTIONS

If it appears to the Board that any person has engaged or is about to engage in any act or practice constituting a violation of these Regulations or any rule, regulation, or order of the Board, the Board may bring an action in the appropriate circuit court to enjoin any such acts or practices and to enforce compliance with these Regulations or any rule, regulation, or order of the Board. Upon a proper showing, the court shall grant a restraining order, temporary or permanent injunction, or other appropriate relief. The Board shall not be required to post a bond.

RULE NO. 18
RIGHT OF ENTRY

Any authorized representative or employee of the Department shall have free access and right of entry to all wells, producing facilities and their appurtenances for the purpose of inspecting or testing wells and equipment and for the purpose of determining compliance with these Regulations.

RULE NO. 19
SEVERABILITY

The provisions of these Regulations are severable. If any provision or application of these Regulations is held invalid, such invalidity does not affect other provisions or applications of these Regulations which can be given effect without the invalid provision or application.

The Board of Land and Natural Resources on _____, 19____,
approved and adopted these rules and regulations as *Regulation 8 of The*
Department of Land and Natural Resources.

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

Approved this _____ day
of _____, 19____

Governor of Hawaii

Approved as to form:

Deputy Attorney General

Dated: _____

SUMMARY OF PERTINENT PROVISIONS
OF THE GEOTHERMAL RULES AND REGULATIONS

Part I consisting of Rules 1 to 7 applies to State and reserved lands. State lands are those owned by the State and reserved lands are those privately owned but subject to a mineral reservation clause.

Part II consisting of Rules 8 to 14 applies to all lands, including those privately owned lands, without any mineral reservation clause.

1.5 "Mining operations" follows the statutory definition and does not include preliminary geophysical activities. This definition is tied in with Rule 7.1.g which requires the lessee to commence mining operations within three years from the date of execution of the lease.

2.1 Exploration permits are required for any exploration activity on State or reserved lands, including casual surveys. This would avoid trespassing and provide a basis for record keeping.

2.5 Applications for such permits require the approval of the Board and if not approved within 60 days, the application is required to be resubmitted unless the same has been extended by the Board. This would prevent automatic approval of the same.

2.10 This section authorizes the Chairman to suspend any exploration operation which is in violation of the provisions of the permit, or which may jeopardize the health, safety and welfare of the public.

3.8 Provides for revocation of a mining lease if the lessee fails to pay the rent, royalties, or does not comply with the terms of the lease or the regulations, or ceases mining operation for a period of one year for reasons other than force majeure, the production of less than commercial quantities, or lack of a commercial market. Lessee shall have the right to retain those facilities and land surrounding the same if no default exist. Otherwise, the lessor shall be entitled to said improvements for those facilities and areas in default.

3.9 Authorizes the lessee to surrender a lease at any time and for any reason upon payment of two years' rent so long as the lessee has complied fully with the terms of the lease and the rules and regulations.

3.10 Does not provide for any limit on the amount of acreage but does authorize the Board to set a limit in the future but in no event to be less than 40,000 acres. This would give the developers assurance of being able to acquire at least 40,000 acres until such time as a limit has been established.

3.11 a & b. States that the term of all mining leases shall consist of a primary 10-year period, which may continue for so long thereafter as geothermal resources or by-products are produced in commercial quantities but in no event to exceed 65 years.

3.11 c & d. Provide that the lease may be continued for an additional 5-year period after the primary term if the lessee is diligently engaged in drilling operations or has voluntary shut-in for lack of a market but is proceeding diligently to acquire a contract to sell the production.

3.12 Provides for annual rental for each acre, which amount may be credited against any production royalties.

3.13 Establishes the rates of royalties to be paid to the State to be not less than 10%, nor more than 20% of the gross amount unless the Board determines otherwise. This rule also authorizes the Board to impose any other form of payment; i.e., a percentage of the net profit, cash bonus, or otherwise. Proposed legislation is intended to be introduced to authorize the same.

3.13 a. Also provides that rents and royalties may be adjusted after 35 years from the effective date of the lease and if no agreement is reached, then by arbitration rather than by termination of the lease, the latter being the case under the Federal rules. We think that arbitration would be less of a hardship on the developer in view of the substantial investment and risks involved.

3.13 b & c. Relating to royalties to be paid on geothermal resources and by-products, respectively, provide that the measure of payment will be at the well head. Resources used in the production activity will be included in the amount for which royalty is to be paid while no royalty is required for by-products used in plant operation.

7.1 g. Requires the lessee to commence mining operations within 3 years from the date of execution of the lease except that if the lessee holds more than one lease, then this requirement shall not apply to the other leases so long as the lessee is actively engaged in a mining operation of one such lease. Said rule authorizes the Board to impose other more stringent requirements to prevent a lessee from accumulating any large tract of land for any unreasonable length of time without performing any work at all.

7.5 a. Requires the lessee to drill an offset well in the event that a well adjacent to State or reserved land is draining the resources and that in the event a reasonably prudent geothermal operator does not drill such a well, the Board may require compulsory unitization of leases and lands involved. Legislation is being proposed to authorize the same.

7.5 b. Requires the payment of royalties on those amounts of waste resulting from the willful misconduct or negligence of the operator.

Part II governing drilling for geothermal resources is made applicable to all lands within the State, including privately owned lands.

Rule 9 Requires applications to be filed for any drilling, modification, etc., of a well. It provides for setbacks and well spacing and the prohibition of any directional drilling unless approved by the Chairman. Cementing requirements, blow-out prevention, equipment, well testing, etc., are also covered under said rule.

Rule 12 Requires the approval of the Board before any well is abandoned or deserted and requires that any abandoned well shall be plugged under the requirements described in said rule.

Rule 13 Deals with well records and reports.

Rule 14 Covers various requirements relating to environmental protection.



JOHNSON H. WONG
Deputy Attorney General

2.9 Departmental Investigation.

The department may conduct scheduled and unscheduled inspections and investigations of operations conducted under geothermal exploration permits.

2.10 Suspension of Permits.

The Chairman may issue an order immediately suspending operations conducted under a geothermal exploration permit if: 1

[a. The permittee remains in violation of the regulatory requirements of the department, the Office of Environmental Quality Control, the Hawaii Departments of Health, Labor and Industrial Relations, and Taxation, or other legally constituted authority, in excess of 30 days after notice in writing from the appropriate agency.]

[b] The permittee is in violation of any [exploration permit] terms or conditions which, in the judgment of the Chairman, jeopardizes the public health, safety, and welfare.

2.11 Cancellation of Permits.

The ^{Board} department may cancel a geothermal exploration permit if it finds, after notice to the permittee and allowance for an opportunity for hearing, that permit requirements are not being observed after notification to the permittee.

of the permit

RULE NO. 3
GEOTHERMAL MINING LEASES

3.1 Geothermal Mining Leases.

The Board may, in accordance with these rules and regulations, lease the right to develop and utilize geothermal resources in State and reserved lands. *Prior to the public auctioning or granting without public auction of a mining lease, the Board shall set the terms and conditions of the lease.*

3.2 Geothermal Resources Available for Leasing.

at the discretion of the Board,
All State and reserved lands shall be considered available for geothermal mining leases, [except:]

[a. Lands designated as natural area reserve.]

[b. Lands that the Board may in its discretion withdraw from availability for leasing in the public interest.]

line 28 3.3 Qualified Applicants.

Any person as defined in these rules and regulations shall be qualified to lease [the] geothermal resources in State [lands] or reserved lands or take or hold an interest therein, unless the Board first determines, after notice and hearing, for good cause shown, that a person is disqualified from leasing or taking or holding an interest in geothermal resources in State lands or reserved lands. [No member of the Board, the Chairman, or employee of the Department may take or hold any lease or interest in State lands.]

3.4 Mining Leases by Public Auction.

on State lands granted only
[All geothermal] mining leases shall be ~~issued~~ *granted* on a competitive bid basis at public auction, [except] as provided in Rule 3.5. 4.

3.5 Mining Leases Without Public Auction.

Mining leases on [In the case of] reserved lands [the Board] may *be* grant *ed on a competitive bid basis at public auction* [a geothermal] mining lease without public auction, to the occupier thereof or his assignee of the rights to obtain a mining lease if approved by two-thirds of its voting members, otherwise, by public auction as provided in Sections 182-4 and 182-5 of Chapter 182, Hawaii Revised Statutes, and Rule 4 of these Regulations.]

Longman to occupier

as provided in Rule 5.

3.6 Size of Leaseable Tract.

A geothermal mining lease shall not embrace an area of more than 5,000 acres of contiguous land; except that as provided in Section 182-8, a mining lease shall not embrace an area of more than 2,560 acres of contiguous land ~~for an~~ area in which the longest dimension is six times greater than its narrowest dimension. A geothermal mining lease shall embrace an area of not less than 100 acres, unless the Board, at its discretion, deems otherwise.

3.7 Assignment of Mining Leases.

insert item i from p 8 → *a. a.*
b. b. Any mining lease may be assigned in whole or in part, subject to the approval of the Board, to an assignee who shall have the same qualifications as any bidder for a mining lease. The assignee shall be bound by the terms of the lease to the same extent as if the assignee were the original lessee. The approval of the assignment by the Board shall release the assignor from any liabilities or duties under the mining lease as to the portion thereof assigned except for any liability or duty which arose prior to the approval of the assignment by the Board and which remains unsatisfied or unperformed.

c. c. No assignment shall be effective until written approval is given. An assignment shall take effect the first day of the month following the approval of the assignment.

d. d. A lease may be assigned as to all or part of the acreage included therein to any person qualified to hold a State lease, provided that neither the assigned nor the retained part created by the assignment shall contain less than 40 acres. No undivided interest in a lease of less than 10% shall be created by assignment.

e. e. [In an assignment of the complete interest in all of the lands in a lease,] the assignor and his surety shall continue to be responsible for performance of any and all obligations under the lease until the ~~effective date~~ *approval* of the assignment. After the ~~effective date~~ *approval* of any assignment, the assignee and his surety shall be bound by the terms of the lease to the same extent as if the assignee were the original lessee, any conditions in the assignment to the contrary notwithstanding.

f. f. An assignment of the record title of the complete interest in a portion of the lands in a lease shall clearly segregate the assigned and retained portions. After the effective date, the assignor is released and discharged from any obligations thereafter accruing with respect to the assigned lands. Such segregated leases shall continue in full force and effect for the primary term of the original lease or as further extended pursuant to the terms of these rules.

f. Where an assignment does not segregate the record title to the lease, the assignee, if the assignment so provides, may become a joint principal on the bond with the assignor. The application must also be accompanied by a consent of assignor's surety to remain bound under the bond of record, if the bond, by its terms, does not contain such consent. If a party to the assignment has previously furnished a statewide bond, no additional showing by such party is necessary as to the bond requirement.

g. An assignment must be a good and sufficient legal instrument, properly executed and acknowledged, and should clearly set forth the serial number of the lease, the land involved, the name and address of the assignee, and the interest transferred. A fully executed copy of the instrument of assignment must be filed with the application for approval. An assignment must affect or concern only one lease or a portion thereof, except for good cause shown.

h. The application for approval of an assignment must be on forms provided by the Department or exact copies. It must be accompanied by a signed statement by the assignee either (1) that he is the sole party in interest in the assignment, or (2) setting forth the names and qualifications of the other parties taking an interest in the lease. Where the assignee is not the sole party in interest, separate statements must be signed by each of the other parties and by the assignee setting forth the nature and extent of the interest of each party and the nature of the agreement between them. If payments out of production are reserved, a statement must be submitted stating the details as to the amount, method of payment, and other pertinent items. These separate statements must be filed in the office of the Department in Honolulu not later than fifteen (15) days after the filing of the application for approval.

i. If the lease account is not in good standing at the time the assignment is reached for action, the request for approval of the assignment will be denied, and the lease shall be subject to termination in accordance with Rule 3.8.

add → as g. (omit the heading of 3.14)
from
p 14,
item 3.14
as;

page 6
j. All applications for approval of assignments must be accompanied by a non-refundable fee of \$100.00 for each assignment.

3.8 Revocation of Mining Leases.

by the Board
A geothermal mining lease may be revoked if the lessee fails to pay rentals when due or if any of the terms of the lease or of these rules and regulations are not complied with, or if the lessee wholly ceases all mining operations without the written consent of the Board for other than reasons of force majeure or the uneconomic operation of the mining lease for a period of one year. However, the Board shall give the lessee notice of any default and the lessee shall have six months from the date of the notice to remedy the default before revocation of the lease.

3.9 Surrender of Mining Leases.

Any lessee of a geothermal mining lease, who has complied fully with all the terms, covenants, and conditions of the existing lease, may, with the consent of the Board surrender at any time and from time to time all or any part of the mining lease or the land contained therein upon payment as consideration therefor two years' rent prorated upon the portion of the lease or land surrendered and as otherwise specified in Section 182-15 of Chapter 182, HRS. A geothermal mining lease may also be surrendered if as a result of a final determination by a court of competent jurisdiction, the lessee is found to have acquired no rights in or to the minerals on reserved lands, nor the right to exploit the same, pursuant to the lease, and, in such event, the lessee shall be reimbursed for rentals paid to the State pursuant to the lease.

267
pg 9
3.10 Number of Mining Leases; Leasehold Limitations.

There shall be no limit upon the number of geothermal mining leases that may be granted to any person undertaking any geothermal mining operation, as specified in Section 182-8 of Chapter 182, Hawaii Revised Statutes.

However, no person shall take, hold, own, or control at one time, whether acquired from the Board under these rules by lease or approved assignment of lease, or indirectly, a divided or undivided interest in geothermal resources in State and/or reserved lands in excess of 40,000 acres. In computing total holdings, ownership, or control, no person shall be charged with an interest through any association, firm or corporation

3.11 Term of Mining Leases

shall consist of a primary ten-year period and a secondary period which shall be determined at the discretion of the Board, except that the term of primary and secondary periods that the term of such lease shall not exceed 65 years from the effective date. The effective date of all leases shall be the first day of the month following the Board's approval of the lease bid or lease grant as the case may be. All leases may be continued beyond the primary period, without reopening or renegotiating any terms or conditions of the lease, as provided herein Rule 3.11.

end
 C.B. If, ^{at the expiration} of the primary term of ^{a mining} the lease, geothermal resources are not being produced or demonstrably capable of being produced from the leased land, but the lessee is actively engaged in drilling operations below the depth of 1,000 feet or at a lesser depth of productive zone, ~~then the lease shall continue in force so long as drilling operations are being diligently and continuously prosecuted on the leased land or upon lands with which the leased land is unitized. Drilling operations shall be considered to be diligently and continuously prosecuted if not more than 120 days shall elapse between the completion or abandonment of one well and the beginning of operations for the drilling of another well. For good cause shown, the Chairman may extend the time for an additional period, not to exceed 120 days. A written request must be received by the Chairman at least 10 calendar days before the expiration of the initial 120-day period.~~

during
 d. If ^{during} at the expiration of the primary ^{period a mining} term of the lease, geothermal resources are being produced or utilized in ^{commercial} paying quantities, that lease shall continue for so long thereafter as geothermal resources are produced or utilized in paying quantities, ~~but the duration of the lease shall in no event continue for more than 55 years after the end of the primary term.~~ Production or utilization of geothermal resources in ^{commercial} paying quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal resources for delivery to or utilization by a facility or facilities not yet installed, but scheduled for installation.

period
 d. ~~Lessee shall exercise diligence to market or utilize geothermal resources in paying quantities.~~ If leased land is capable of producing geothermal resources in ^{commercial} paying quantities, but production is shut-in, the lease shall continue in force upon payment of rentals for the duration of the primary ^{period} term or five (5) years after shut-in, whichever is longer. If the ^{Chairman} Board determines that the lessee is proceeding diligently to acquire a contract to sell or to utilize the production or is progressing with installations needed for production, the lease shall continue in force for an additional five (5) years, upon payment of rentals, otherwise the lease may be terminated by the Board. The Chairman shall continue to review shut-in leases every five (5) years until production ^{in commercial quantities occurs} and payment of royalties takes place or the lease is terminated by the Board for lessee's lack of due diligence or surrendered by the lessee.

voluntarily
 in a diligent manner, that lease may be continued, ^{at the discretion of the Board} for a period of five years and for as long thereafter as geothermal resources are ^{being} produced or utilized in commercial quantities.

e. A lease that has been extended by reason of production or utilization of geothermal resources and which has been determined by the Chairman to be incapable of further commercial production and utilization, may be further extended for five (5) years if one or more valuable by-products are produced in commercial quantities. The Board may extend the lease for one or more additional five (5) year terms upon such terms and conditions as the Board deems fit to allow continued production of one or more valuable by-products in commercial quantities.

3.12 Rentals.

a. Lessee shall pay to the State of Hawaii in advance each year the annual rental bid for each acre or fraction thereof under lease. The annual rental for the first year of the ^{term} shall be due and payable and shall be received in the offices of the Department in Honolulu ~~together with a lease agreement executed by lessee within thirty (30) days of the date of notice of approval or award.~~ The Department will notify the applicant or his representative designated in the application to lease by certified or registered mail of the Board's approval of a lease and specify the exact amount of rental due thereon and the bond requirement under Rule 3-16. ~~Failure to return an executed lease together with the first year rental and bond within thirty (30) days shall result in automatic rejection of the application without further action of the Chairman or Board.~~ Second year and subsequent rental payments must be received in the office of the Department in Honolulu on or before the anniversary date of the lease.

bid

within two days after the acceptance of the bid by the Board and the \$500 deposit shall be credited against such sum.

3.13 Royalties on Geothermal Production

a. The ^{rate of the} royalty to be paid to the State of Hawaii for the production of geothermal resources shall be determined by the Board prior to the bidding or granting of a mining lease, but ^{the rate} shall not be less than 10 per cent nor more than 15 per cent of the production value of the geothermal resources produced under the lease and sold or ~~whenever~~ ^{utilized} by the lessee.

b. The production value of geothermal resources produced shall be determined by the gross sale ~~price~~ paid by a power plant or other legal purchaser for value. In the event that geothermal production hereunder is not sold but is furnished to a plant owned or controlled by the lessee, the gross sale price of such production, for purposes of computing royalties, shall be that which is reasonably equal to the price being paid ^{to} other geothermal producers for geothermal production of like quality and quantity. Should the Board believe that any charges imposed and deducted are excessive or that the price received by the lessee is unreasonable, the lessee shall upon thirty (30) days notice, provide the Board with evidence that the charges or price or both comply with the above requirements.

due and

The annual

due each year

b. Annual rentals for each acre or fraction thereof under lease shall be at the price bid at public auction, which rental shall be deducted from production royalties as they accrue during that lease year, if there be any. The rental due a given shall not be recoverable from production in future years.

(3)
3.14 Royalties on Geothermal Production same

2 royalties due

a. The lessee shall cause to be paid to the State of Hawaii the following royalties on the value of geothermal production from the leased premises:

(1) A royalty of 10 per centum of the amount or value of geothermal resources, or any other form of heat or energy derived from production under the lease and sold or utilized by the lessee or reasonably susceptible to sale or utilization by the lessee, unless used or consumed by lessee in his production operations;

The rate of royalty to be paid to the State of Hawaii for production of any geothermal by-product shall be
C. 12 [A royalty of 5 per centum of the amount or value of any such associated by-product derived from production under the lease and sold or utilized or reasonably susceptible of sale or utilization by the lessee, including commercially demineralized water, except that no payment of a royalty will be required on such water if it is used in plant operation for cooling or in the generation of electric energy or otherwise. No royalty shall be paid for associated by-products used or consumed by lessee in his production operations.] *or otherwise disposed of*

b. The value of geothermal production from the leased premises for the purpose of computing royalties shall be the following:

(1) The total consideration accruing to the lessee from the sale thereof in cases where geothermal resources are sold by the lessee to another party in an arms-length transaction; or

(2) The value of the end product attributable to the geothermal resource produced from a particular lease where geothermal resources are not sold by the lessee before being utilized, but are instead directly used in manufacturing power production, or other industrial activity; or

(3) When a part of the resource only is utilized by the lessee and the remainder sold, the sum of (1) and (2) immediately above.

c. Lessee shall within 15 days notify the Chairman of any discovery of geothermal resources upon the leased premises and of any such geothermal resources used or removed for commercial purposes from the leased land or utilized thereon.

rate of the
The royalty to be paid to the State of Hawaii for
The production of geothermal resources shall be determined
by the Board prior to the bidding or granting of a mining
lease, but shall not be less than 10 per cent nor more
than 15 per cent of the production value of the geothermal
resources produced

d. Royalties will be due and payable monthly in the office of the Department in Honolulu on or before the last day of the calendar month following the month in which the geothermal resources and/or their associated by-products are produced and utilized or sold.

e. The lessee shall file with the Chairman within thirty (30) days after execution a copy of any contract for the sale of geothermal resources from the leased land. Reports of sales or utilization by lessee and royalty for each productive lease must be filed each month once production begins, even though production may be intermittent, unless otherwise authorized by the Chairman. Total volumes of geothermal resources produced and utilized or sold, including associated by-products, the value of production, and the royalty due the State of Hawaii must be shown. This report is due on or before the last day of the month following the month in which production was obtained and sold or utilized, together with the royalties due the State of Hawaii.

f. Metering equipment shall be maintained and operated by lessee in such a manner as to meet acceptable standards of accuracy consistent with geothermal industry practices. Use of such equipment shall be discontinued at any time upon determination by the Chairman that standards of accuracy or quality are not being maintained and, if found defective, the Chairman will determine the quantity and quality of production from the best evidence available.

g. The lessee shall periodically furnish the Chairman the results of periodic tests showing the content of by-products in the produced geothermal resources. Such tests shall be taken as specified by the Chairman and by the method of testing approved by him, except that tests not consistent with industry practice shall be conducted at the expense of the State of Hawaii.

h. The Board may authorize a lessee ^{shall have the right} to commingle production from wells on his lease with production from other leases held by him or by other lessees subject to such conditions as he may prescribe, but lessee shall not do so without the Board's approval.

The lessee shall make payment of royalties to the Board in Honolulu within thirty days after the end of each calendar month and accompany such payment with a true and correct written statement by the lessee, showing the volumes of each geothermal resource sold, used, or otherwise disposed of, and lessee shall furnish such other data as may be necessary to enable the Board to audit and verify all royalties due and payable to the State of Hawaii.

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3.15 Overriding Royalty Interests.

a. Overriding royalty interests in geothermal leases constitute accountable acreage holdings under these regulations. If an overriding royalty interest is created which is not shown in the instrument of assignment or transfer, a statement must be filed with the Chairman describing the interest. Any such assignment will be deemed valid if accompanied by a statement over the assignee's signature that the assignee is a person as defined in these rules and that his interests in geothermal leases do not exceed the acreage limitations provided in these rules. All assignments of overriding royalty interests without a working interest and otherwise not contemplated by Rule 3.7 must be filed for record in the office of the Department in Honolulu within ninety (90) days from the date of execution. Such interests will not receive formal approval.

b. No overriding royalty on the production of geothermal resources created by an assignment contemplated by Rule 3.7 or otherwise shall exceed 5 percent nor shall an overriding royalty, when added to overriding royalties previously created, exceed 5 percent.

c. The creation of an overriding royalty interest that does not conform to the requirements of this rule shall be deemed a violation of the lease terms, unless the agreement creating overriding royalties provides for a prorated reduction of all overriding royalties so that the aggregate rate of overriding royalties does not exceed 5 percent.

3.17 Commingling.

Lessee shall have the right, at its election prior to sale, to commingle geothermal resources produced from the leased land with that produced from other leases held by him or by other lessees, but lessee shall not do so without the Board's approval. However, before there shall be such a commingling of geothermal production the lessee shall determine the quantities and value of such production upon which royalties are due under the lease and agree that in making such determinations, all measurements and samples shall be made and taken in accordance with good geothermal industry practices.

Based on the above.

Transfer
to page 7
as part
of 3.7
"assignment"

d. In addition to the foregoing limitations, any agreement to create or any assignment creating royalties or payments out of production from the leased lands shall be subject to the authority of the Chairman, after notice and hearing, to require the proper parties thereto to suspend or modify such royalties or payments out of production in such manner as may be reasonable when and during such periods of time as they may constitute an undue economic burden upon the reasonable operations of such lease.

main 3.15 Unit or Cooperative Plans

a. For the purpose of more properly conserving the natural resources of any geothermal pool, field or like area, lessees under leases issued by the Board are authorized, with the written consent of the ^{Board} Chairman, to commit the State lands to unit, cooperative or other plans of development or operation with other State lands, Federal lands, or privately-owned lands. Applications to unitize shall be filed with the Chairman who shall certify whether such plan is necessary or advisable in the public interest. He may require whatever documents or data he deems necessary. To implement such unitization, the Board may with the consent of its lessees modify and change any and all terms of leases issued by it which are committed to such unit, cooperative or other plans of development or operations.

Hawaii b. The agreement shall describe the separate tracts comprising the unit, disclose the apportionment of the production or royalties and costs to the several parties, and the name of the operator, and shall contain adequate provisions for the protection of the interests of all parties, including the State of *[Idaho]* The agreement should be signed by or in behalf of all interested necessary parties before being submitted to the Chairman. It will be effective only after approval by the Chairman. The unit operator must be a person as defined by these rules and he must be approved by the Chairman.

c. The owners of any right, title or interest in the geothermal resources to be developed or operated under an agreement can be regarded as proper parties to a proposed agreement. All such owners must be invited to join as parties to the agreement. If any owner fails or refuses to join the agreement, the proponent of the agreement should declare this to the Chairman and should submit evidence of efforts made to obtain joinder of such owner and the reasons for nonjoinder.

3.16 Bond Requirements

a. Performance Bonds: Concurrent ^{with} the execution of the lease by the lessee, lessee shall furnish to Chairman a good and sufficient bond in the amount of Two Thousand Dollars (\$2,000.00) in favor of the State of Hawaii, conditioned on the payment of all damages to the land surface and all improvements thereon, including without limitation crops on the lands, whether or not the lands under this lease have been sold or leased by the Board for any other purpose; conditioned also upon compliance by lessee of his obligations under this lease and these rules. Prior to initiation of operations to drill a well for any purpose, lessee shall increase such bond to the amount of Ten Thousand Dollars (\$10,000.00). The Chairman may require a new bond in a greater amount at any time after operations have begun, upon a finding that such action is reasonably necessary.

b. Statewide Bond: In lieu of the aforementioned bonds, lessee may furnish a good and sufficient "statewide" bond conditioned as above in the amount of Fifty Thousand Dollars (\$50,000.00) in favor of the State of Hawaii, to cover all lessee's leases and operations carried on under all Geothermal Mining leases issued and outstanding to lessee by the Board at any given time during the period when the "statewide" bond is in effect.

c. Operator's Bond: An operator or each operator, if more than one on different portions of a lease, may furnish a general lease bond of not less than Ten Thousand Dollars (\$10,000.00) in his own name as principal on the bond in lieu of the lessee. Where there is more than one operator's bond affecting a single lease, each such bond must be conditioned upon compliance with all lease terms for that portion of the leasehold for which each operator is responsible. Where a bond is furnished by an operator, suit may be brought thereon without joining the lessee if he is not a party to the bond.

d. Duration of Bonds: The period of liability of any bond will not be terminated until all lease terms and conditions have been fulfilled and the bond is released in writing by the Chairman.

Every lessee of a mining lease and every assignee thereof shall file with the Board, a bond, in a form and amount approved by the Board and made payable to the State of Hawaii, conditioned upon faithful performance of all requirements of Chapter 182, Hawaii Revised Statutes, and of the mining lease, and also conditioned upon full payment by the lessee of all damages suffered by the occupiers, in the case of reserved lands.

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3.17 Liability Insurance.

Prior to entry upon the leased lands, lessee shall cause to be secured and to be thereafter maintained in force during the term of ^{the} [this] lease, public liability and property damage insurance and products liability insurance in the ^{amounts to be determined by the Board in the lease} sum of Two Hundred and Fifty Thousand Dollars (\$250,000) for injury or death for each occurrence; in the aggregate sum of Five Hundred Thousand Dollars (\$500,000) for injury or death; and in the sum of One Hundred Thousand Dollars (\$100,000) for damages to property and products damage caused by any occupancy, use, operations or any other activity on leased lands carried on by lessee, its agents or contractors in connection therewith.

close up (Explosion, collapse and underground hazards are to be included prior to initiation of operations to drill a well to 1,000 feet or deeper. Lessee shall evidence such additional coverage to the Chairman prior to initiation of drilling operations. If the land surface and improvements thereon covered by the lease have been sold or leased by the State of Hawaii, the owner or lessee of surface rights and improvements shall be a named insured. The State of Hawaii shall be a named insured in all instances. This policy or policies of liability insurance shall contain the following special endorsement:

"The State of Hawaii, the Hawaii State Board of Land and Natural Resources, the Chairman of the Board of Land and Natural Resources, the Department of Land and Natural Resources, and (herein insert name of owner or lessee of surface rights, if applicable) and the officers, employees and agents of each and every of the foregoing (hereinafter referred to as "additional insureds") are additional insureds under the terms of this policy, provided, however, the additional insureds shall not be insured hereunder for any primary negligence or misconduct on their part, but additional insureds shall be insured hereunder for secondary negligence or misconduct, which shall be limited to the failure to discover and cause to be corrected the negligence or misconduct of lessee, its agents or contractors. This insurance policy will not be ^{Board} cancelled without thirty (30) days prior written notice to the ~~Hawaii~~ Department of Land and Natural Resources. None of the foregoing additional insureds is liable for the payment of premiums or assessments on this policy."

No cancellation provision in any insurance policy shall be in derogation of the continuous duty of lessee to furnish insurance during the term of this contract. Said policy or policies shall be underwritten to the satisfaction of the Chairman. A signed complete certificate of insurance, with the endorsement required by this paragraph, shall be submitted to the Chairman prior to entry upon the leased land. At least thirty (30) days prior to the expiration of any such policy, a signed complete certificate of insurance, with the endorsement required by this paragraph, showing that such insurance coverage has been renewed or extended, shall be filed with the Chairman.

"Suspension of operations" means the cessation of drilling, redrilling, or alteration of casing before the well is officially abandoned or completed.

1.7 Geothermal Policy.

With the adoption of these rules and regulations, it shall be the policy of the Board to encourage the exploration, development and use of geothermal resources in a manner that will provide for the optimum use of the land with appropriate protection of the environment and natural resources including geothermal, ground water, fish and wildlife, and forests.

RULE NO. 2

GEOHERMAL EXPLORATION PERMITS

2.1 Exploration Permit Required.

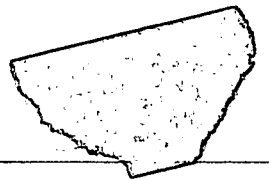
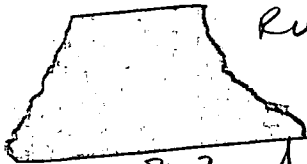
An exploration permit is required to conduct any exploration activity ^{which} relates to the search on State lands for evidence of geothermal resources and which may result in damage to State lands or resources thereon. Such exploration activity includes, but is not limited to, geophysical operations, drilling of shallow temperature test holes less than 500 feet in depth, construction of roads and trails, and cross-country transit by vehicle over State lands. Exploration activity requiring a permit does not include drilling for subsurface geologic information ^{or the discovery}, evaluation, or production of geothermal resources; such drilling being regulated elsewhere in these rules and regulations. Exploration activity requiring a permit does not include the casual use of State lands for geothermal resources exploration. Casual use means activities that involve practices which do not ordinarily lead to any appreciable disturbance or damage to lands, resources and improvements. For example, activities which do not

involve use of heavy equipment or which do not involve vehicle movement except over established roads and trails are considered casual use.

Exploration activity requiring a permit under Rule 2 does not include exploration activity conducted pursuant to a geothermal mining lease on State lands.

Rule 2 is not applicable to

exploration activities conducted pursuant to a mining lease. The following activities are under Rule



2.2 Application for Exploration Permits.

Any person may apply for an [original, amended, or renewal] exploration permit by submitting a written application to the Board containing the following:

- a. The name and address of the person, association, or corporation for whom the operations will be conducted and of the person who will be in charge of the actual exploration activities;
- b. A description of the type of exploration activities proposed to be undertaken;
- c. A description of the lands to be explored;
- d. a map or maps, available from State or Federal sources, showing the lands to be entered or disturbed;
- e. The approximate dates of the commencement and termination of exploration activities.
- f. a surety company bond of not less than \$5,000 conditioned upon compliance with all terms and conditions of Rule 2 and the exploration permit.



2.3 Permit Filing Fee.

Each application shall be accompanied by a non-refundable filing fee in the amount of \$100.

2.4 Number of Permits.

There are no limitations as to the number of permits which may be applied for by any one person

2.5 Approval of Permit Application

The Board shall either approve, approve subject to terms and conditions it may at its discretion specify, or disapprove an application for a geothermal exploration permit within 60 calendar days after the date of receipt of the application. If disapproved, the Board shall, through its Chairman, explain in writing to the applicant the reasons for disapproval.

2.6 Non-Exclusive Permits

Geothermal exploration permits ^{under Rule 2} allow only non-exclusive access to lands ^{state} for geothermal exploration purposes and ^{do not} provide any preference rights to ~~to~~ a mining lease of the lands explored by such permits.

2.8 Confidentiality of Exploration Results

Upon termination of the exploration permit, the results of the exploration shall be submitted to the Chairman ^{for the Board} and kept confidential. If the person holding the permit does not apply for a mining lease of the lands explored within a period of six months from the date the results are submitted to the Chairman, then the Board in its discretion need not keep the results confidential.

2.7 Duration of Permits

Exploration permits shall be for a period of two years from date of issuance, but may be renewed for an additional period of time in the discretion of the Board.

2.9 Departmental Investigation. (Am 17)

The department may conduct scheduled and unscheduled inspections and investigations of operations conducted under geothermal exploration permits.

2.10 Suspension of Permits.

The Chairman may issue an order immediately suspending operations conducted under a geothermal exploration permit if:

a. The permittee remains in violation of the regulatory requirements of the department, the Office of Environmental Quality Control, the Hawaii Departments of Health, Labor and Industrial Relations, and Taxation, or other legally constituted authority, in excess of 30 days after notice in writing from the appropriate agency.

b. The permittee is in violation of any exploration permit terms or conditions which, in the judgment of the Chairman, jeopardizes the public health, safety, and welfare.

2.11 Cancellation of Permits.

The department may cancel a geothermal exploration permit if it finds, after notice to the permittee and allowance for an opportunity for hearing, that:

[a] Permit requirements are not being observed after notification to the permittee.

[b. False information was submitted in the application, application exhibits, or other required reports.]

RULE NO. 3

GEOHERMAL MINING LEASES

3.1 Geothermal Mining Leases Required.

The Board may, in accordance with these rules and regulations,
~~[No person shall drill for exploratory development or production; or extract, develop, or dispose of any geothermal resources from any lands owned by the State or any lands owned by any person in which the State has reserved to itself, expressly or by implication, the minerals or the right to mine minerals, or both; without a mining lease issued under these rules and regulations.]~~ *denial the right to develop and utilize geothermal resources in State and reserved lands.*

3.2 Geothermal Resources Available for Leasing.

All State and reserved lands which the Board determines to have known geothermal resources shall be considered available for geothermal mining leases, [The existence of a geothermal discovery or producing well or natural geothermal occurrence at the surface in the immediate vicinity of lands applied for shall be the primary evidence for determining that "known geothermal resources" exist for purposes of these regulations. Exceptions to such lands available for leasing include:] *except:*

a. Lands designated as natural area reserve.

b. Lands that the Board may in its discretion withdraw from availability for leasing in the public interest, [such as withdrawing lands for research and development or pilot demonstration projects.]

3.3 Qualified Applicants.

as defined in these rules and regulations

Any person shall be qualified to lease the geothermal resources in State lands or reserved lands or take or hold an interest therein unless the Board first determines, after notice and hearing, for good cause shown, that a person is disqualified from leasing or taking or holding an interest in geothermal resources in State lands or reserved lands. No member of the Board, the Chairman, or employee of the Department may take or hold any lease or interest in State lands.

3.4 Mining Leases by Public Auction.

All geothermal mining leases shall be issued upon a competitive bid basis at public auction, except as provided in Rule 3.5.

3.5 Mining Leases Without Public Auction.

In the case of reserved lands, the Board may grant a geothermal mining lease without public auction to the occupier thereof or his assignee of the rights to obtain a mining lease if approved by two-thirds of the voting members of the Board; otherwise, by public auction as provided in Sections 182-4 and 182-5 of Chapter 182, Hawaii Revised Statutes, and Rule 4 of these Regulations.

3.6 Size of Leaseable Tract.

an area of contiguous land not embrace more than 5000 acres of land

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A geothermal mining lease shall be limited to any contiguous area of land not exceeding ten square miles; except that, as provided in Section 182-8, a mining lease shall be limited to four square miles of contiguous land if the boundaries are such that its longest dimension is six times or more its narrowest dimension.

3.7 Assignment of Mining Leases.

or an area in which the of
A geothermal mining lease shall embrace an area of not less than 100 acres unless the Board at its discretion deems otherwise.
a. Any mining lease may be assigned in whole or in part, subject to the approval of the Board, to an assignee who shall have the same qualifications as any bidder for a mining lease. The assignee shall be bound by the terms of the lease to the extent as if the assignee were the original lessee. The approval of the assignment by the Board shall release the assignor from any liabilities or duties under the mining lease as to the portion thereof assigned except for any liability or duty which arose prior to the approval of the assignment by the Board and which remains unsatisfied or unperformed.

b. No assignment shall be effective until written approval is given. An assignment shall take effect the first day of the month following the approval of the assignment.

c. A lease may be assigned as to all or part of the acreage included therein to any person qualified to hold a State lease, provided that neither the assigned nor the retained part created by the assignment shall contain less than 40 acres. No undivided interest in a lease of less than 10% shall be created by assignment.

d. In an assignment of the complete interest in all of the lands in a lease, the assignor and his surety shall continue to be responsible for performance of any and all obligations under the lease until the effective date of the assignment. After the effective date of any assignment, the assignee and his surety shall be bound by the terms of the lease to the same extent as if the assignee were the original lessee, any conditions in the assignment to the contrary notwithstanding.

e. An assignment of the record title of the complete interest in a portion of the lands in a lease shall clearly segregate the assigned and retained portions. After the effective date, the assignor is released and discharged from any obligations thereafter accruing with respect to the assigned lands. Such segregated leases shall continue in full force and effect for the primary term of the original lease or as further extended pursuant to the terms of these rules.

f. Where an assignment does not segregate the record title to the lease, the assignee, if the assignment so provides, may become a joint principal on the bond with the assignor. The application must also be accompanied by a consent of assignor's surety to remain bound under the bond of record, if the bond, by its terms, does not contain such consent. If a party to the assignment has previously furnished a statewide bond, no additional showing by such party is necessary as to the bond requirement.

g. An assignment must be a good and sufficient legal instrument, properly executed and acknowledged, and should clearly set forth the serial number of the lease, the land involved, the name and address of the assignee, and the interest transferred [and the consideration]. A fully executed copy of the instrument of assignment must be filed with the application for approval. An assignment must affect or concern only one lease or a portion thereof, except for good cause shown.

h. The application for approval of an assignment must be on forms provided by the Department or exact copies. It must be accompanied by a signed statement by the assignee either (1) that he is the sole party in interest in the assignment, or (2) setting forth the names and qualifications of the other parties taking an interest in the lease. Where the assignee is not the sole party in interest, separate statements must be signed by each of the other parties and by the assignee setting forth the nature and extent of the interest of each party and the nature of the agreement between them. If payments out of production are reserved, a statement must be submitted stating the details as to the amount, method of payment, and other pertinent items. These separate statements must be filed in the office of the Department in Honolulu not later than fifteen (15) days after the filing of the application for approval.

i. If the lease account is not in good standing at the time the assignment is reached for action, the request for approval of the assignment will be denied, and the lease shall be subject to termination in accordance with [these rules] Rule 3.8.

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However, no person shall take, hold, own, or control at one time, whether acquired from the Board under these rules by lease or approved assignment of lease, or indirectly, a divided or undivided interest in geothermal resources in State and/or reserved lands. ~~interests of~~ 40,000 acres. In computing total holdings, ownerships, or control, no person shall be charged with an interest through any association, firm or corporation unless he is the beneficial owner of 10 percent or more of the stock or other instruments of ownership or control of such association, firm, or corporation. Persons owning an overriding royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with an interest. The unitizing of acreage in one or more leases pursuant to a cooperative or unit plan of development or operation approved by the Board shall be excepted in determining an interest. ~~Leased acreage~~ actually producing geothermal resources and paying production royalties shall not be included in accountable interests.

j. All applications for approval of assignments must be accompanied by a non-refundable fee of \$100.00 for each assignment.

3.8 Revocation of Mining Leases.

A geothermal mining lease may be revoked if the lessee fails to pay rentals when due or if any of the terms of the lease or ~~of law~~ are not complied with, or if the lessee wholly ceases all mining operations without the written consent of the Board for other than reasons of force majeure or the uneconomic operation of the mining lease for a period of one year. However, the Board shall give the lessee notice of any default and the lessee shall have six months from the date of the notice to remedy the default before revocation of the lease.

3.9 Surrender of Mining Leases.

Any lessee of a geothermal mining lease, who has complied fully with all the terms, covenants, and conditions of the existing lease, may, with the consent of the Board surrender at any time and from time to time all or any part of the mining lease or the land contained therein upon payment as consideration therefor two years' rent prorated upon the portion of the lease or land surrendered and as otherwise specified in Section 182-15 of Chapter 182, HRS. A geothermal mining lease may also be surrendered if as a result of a final determination by a court of competent jurisdiction, the lessee is found to have acquired no rights in or to the minerals on reserved lands, nor the right to exploit the same, pursuant to the lease, and, in such event, the lessee shall be reimbursed for rentals paid to the State pursuant to the lease.

3.10 Number of Mining Leases.

There shall be no limit upon the number of geothermal mining leases that may be granted to any person undertaking any geothermal mining operation, as specified in Section 182-8 of Chapter 182, Hawaii Revised Statutes.

3.11 Geothermal Mining Lease Terms.

The terms and conditions of all geothermal mining leases shall be approved by the Board as provided in Chapter 182 and as the Board may in addition deem appropriate or in the public interest.

3.12 Duration of Geothermal Mining Leases.

a. The primary term of a geothermal mining lease shall be ten years from the effective date of the lease. The effective date of the lease shall be the first day of the month within which the lease is auctioned or in which the Board formally approves the issuance of a lease.

b. If, at the expiration of the primary term of the lease, geothermal resources are not being produced or demonstrably capable of being produced from the leased land, but the lessee is actively engaged in drilling operations to 1,000 feet or deeper, then the lease shall continue in force so long as drilling operations are being diligently and continuously prosecuted on the leased land or upon lands with which the leased land is unitized. Drilling operations shall be considered to be diligently and continuously prosecuted if not more than 120 days shall elapse between the completion or abandonment of one well and the beginning of operations for the drilling of another well. For good cause shown, the Chairman may extend the time for an additional period, not to exceed 120 days. A written request must be received by the Chairman at least 10 calendar days before the expiration of the initial 120-day period.

c. If at the expiration of the primary term of the lease, geothermal resources are being produced or utilized in paying quantities, that lease shall continue for so long thereafter as geothermal resources are produced or utilized in paying quantities, but the duration of the lease shall in no event continue for more than 55 years after the end of the primary term. Production or utilization of geothermal resources in paying quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal resources for delivery to or utilization by a facility or facilities not yet installed, but scheduled for installation.

d. Lessee shall use due diligence to market or utilize geothermal resources in paying quantities. If leased land is capable of producing geothermal resources in paying quantities, but production is shut-in, the lease shall continue in force upon payment of rentals for the duration of the primary term or five (5) years after shut-in, whichever is longer. If the Chairman determines that the lessee is proceeding diligently to acquire a contract to sell or to utilize the production or is progressing with installations needed for production, the lease shall continue in force for an additional five (5) years, upon payment of rentals, otherwise the lease may be terminated by the Board. The Chairman shall continue to review shut-in leases every five (5) years until production and payment of royalties takes place or the lease is terminated by the Board for lessee's lack of due diligence or surrendered by the lessee.

e. A lease that has been extended by reason of production or utilization of geothermal resources and which has been determined by the Chairman to be incapable of further commercial production and utilization may be further extended for five (5) years if one or more valuable by-products are produced in commercial quantities. The Board may extend the lease for one or more additional five (5) year terms upon such terms and conditions as the Board deems fit to allow continued production of one or more valuable by-products in commercial quantities.

¹² 3.13 Rentals.

a. Lessee shall pay to the State of Hawaii in advance each year the annual rental bid for each acre or fraction thereof under lease. The annual rental for the first year of the term shall be due and payable and shall be received in the offices of the Department in Honolulu, together with a lease agreement executed by lessee within thirty (30) days of the date of notice of approval or award. The Department will notify the applicant or his representative designated in the application to lease by certified or registered mail of the Board's approval of a lease and specify the exact amount of rental due thereon and the bond requirement under Rule 3.16. Failure to return an executed lease together with the first year rental and bond within thirty (30) days shall result in automatic rejection of the application without further action of the Chairman or Board. Second year and subsequent rental payments must be received in the office of the Department in Honolulu on or before the anniversary date of the lease. [Failure to pay exact rental shall constitute grounds for immediate termination of the lease by the Chairman who shall note the termination on the official records of the Department.]

b. Annual rentals for each acre or fraction thereof under lease shall be at the price bid at public auction, ~~based on an upset price as follows:~~

\$1.00/yr. - for the first five (5) years;
\$2.00/yr. - for the second five (5) years;
\$3.00/yr. - thereafter;

*unless the Board
otherwise deem
appropriate*

which rental shall be deducted from production royalties as they accrue during that lease year, if there be any. The rental shall not be recoverable from ~~future~~ production.

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in future years
~~2.14~~ Royalties.

due a given

a. The lessee shall cause to be paid to the State of Hawaii the following royalties on the value of geothermal production from the leased premises:

(1) A royalty of 10 per centum of the amount or value of geothermal resources, or any other form of heat or energy derived from production under the lease and sold or utilized by the lessee or reasonably susceptible to sale or utilization by the lessee, unless used or consumed by lessee in his production operations;

(2) A royalty of 5 per centum of the amount or value of any associated by-product derived from production under the lease and sold or utilized or reasonably susceptible of sale or utilization by the lessee, including commercially demineralized water, except that no payment of a royalty will be required on such water if it is used in plant operation for cooling or in the generation of electric energy or otherwise. No royalty shall be paid for associated by-products used or consumed by lessee in his production operations.

b. The value of geothermal production from the leased premises for the purpose of computing royalties shall be the following:

(1) The total consideration accruing to the lessee from the sale thereof in cases where geothermal resources are sold by the lessee to another party in an arms-length transaction; or

(2) The value of the end product attributable to the geothermal resource produced from a particular lease where geothermal resources are not sold by the lessee before being utilized, but are instead directly used in manufacturing power production, or other industrial activity; or

(3) When a part of the resource only is utilized by the lessee and the remainder sold, the sum of (1) and (2) immediately above.

c. Lessee shall within 15 days notify the Chairman of the discovery upon the leased premises ~~of geothermal resources before~~ any such geothermal resources ~~are~~ used or removed for commercial purposes from the leased land or utilized thereon.

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and of

d. Royalties will be due and payable monthly in the office of the Department in Honolulu on or before the last day of the calendar month following the month in which the geothermal resources and/or their associated by-products are produced and utilized or sold.

e. The lessee shall file with the Chairman within thirty (30) days after execution a copy of any contract for the ^{sale} disposal of geothermal resources from the lease. ^{of lease} Reports of sales or utilization by lessee and royalty for each productive lease must be filed each month once production begins, even though production may be intermittent, unless otherwise authorized by the Chairman. Total volumes of geothermal resources produced and utilized or sold, including associated by-products, the value of production, and the royalty due the State of Hawaii must be shown. This report is due on or before the last day of the month following the month in which production was obtained and sold or utilized, together with the royalties due the State of Hawaii.

f. Metering equipment shall be maintained and operated by lessee in such a manner as to meet acceptable standards of accuracy consistent with geothermal industry practices. Use of such equipment shall be discontinued at any time upon determination by the Chairman that standards of accuracy or quality are not being maintained and, if found defective, the Chairman will determine the quantity and quality of production from the best evidence available.

g. The lessee shall periodically furnish the Chairman the results of periodic tests showing the content of by-products in the produced geothermal resources. Such tests shall be taken as specified by the Chairman and by the method of testing approved by him, except that tests not consistent with industry practice shall be conducted at the expense of the State of Hawaii.

h. The Board may authorize ^{shall have the right} lessee to commingle production from wells on his lease with production from other leases held by him or by other lessees subject to such conditions as he may prescribe, but lessee shall not do so without the Board's approval.

3.15 ¹⁴ Overriding Royalty Interests.

a. [Overriding royalty interests in geothermal leases constitute accountable acreage holdings under these regulations.] If an overriding royalty interest is created which is not shown in the instrument of assignment or transfer, a statement must be filed with the Chairman describing the interest. [Any such assignment will be deemed valid if accompanied by a statement over the assignee's signature that the assignee is a person as defined in these rules and that his interests in geothermal leases do not exceed the acreage limitations provided in these rules.] All assignments of overriding royalty interests without a working interest and otherwise not contemplated by Rule 3.7 must be filed for record in the office of the Department in Honolulu within ninety (90) days from the date of execution. Such interests will not receive formal approval.

b. No overriding royalty on the production of geothermal resources created by an assignment contemplated by Rule 3.7 or otherwise shall exceed 5 percent nor shall an overriding royalty, when added to overriding royalties previously created, exceed 5 percent.

c. The creation of an overriding royalty interest that does not conform to the requirements of this rule shall be deemed a violation of the lease terms, unless the agreement creating overriding royalties provides for a prorated reduction of all overriding royalties so that the aggregate rate of overriding royalties does not exceed 5 percent.

5608
Insert
A 3.15 → 3.17
on pg 12, b 3.16

d. In addition to the foregoing limitations, any agreement to create or any assignment creating royalties or payments out of production from the leased lands shall be subject to the authority of the Chairman, after notice and hearing, to require the proper parties thereto to suspend or modify such royalties or payments out of production in such manner as may be reasonable when and during such periods of time as they may constitute an undue economic burden upon the reasonable operations of such lease.

3.16 Bond Requirements

a. Performance Bonds: Concurrent to the execution of the lease by the lessee, lessee shall furnish to Chairman a good and sufficient bond in the amount of Two Thousand Dollars (\$2,000.00) in favor of the State of Hawaii, conditioned on the payment of all damages to the land surface and all improvements thereon, including without limitation crops on the lands, whether or not the lands under this lease have been sold or leased by the Board for any other purpose; conditioned also upon compliance by lessee of his obligations under this lease and these rules. Prior to initiation of operations to drill a well for any purpose, lessee shall increase such bond to the amount of Ten Thousand Dollars (\$10,000.00). The Chairman may require a new bond in a greater amount at any time after operations have begun, upon a finding that such action is reasonably necessary.

b. Statewide Bond: In lieu of the aforementioned bonds, lessee may furnish a good and sufficient "statewide" bond conditioned as above in the amount of Fifty Thousand Dollars (\$50,000.00) in favor of the State of Hawaii, to cover all lessee's leases and operations carried on under all Geothermal Mining leases issued and outstanding to lessee by the Board at any given time during the period when the "statewide" bond is in effect.

c. Operator's Bond: An operator or each operator, if more than one on different portions of a lease, may furnish a general lease bond of not less than Ten Thousand Dollars (\$10,000.00) in his own name as principal on the bond in lieu of the lessee. Where there is more than one operator's bond affecting a single lease, each such bond must be conditioned upon compliance with all lease terms for that portion of the leasehold for which each operator is responsible. Where a bond is furnished by an operator, suit may be brought thereon without joining the lessee if he is not a party to the bond.

d. Duration of Bonds: The period of liability of any bond will not be terminated until all lease terms and conditions have been fulfilled and the bond is released in writing by the Chairman.

¹⁸
3.17 Liability Insurance.

Prior to entry upon the leased lands, lessee shall cause to be secured and to be thereafter maintained in force during the term of this lease, public liability and property damage insurance and products liability insurance in the sum of Two Hundred and Fifty Thousand Dollars (\$250,000) for injury or death for each occurrence; in the aggregate sum of Five Hundred Thousand Dollars (\$500,000) for injury or death; and in the sum of One Hundred Thousand Dollars (\$100,000) for damages to property and products damage caused by any occupancy, use, operations or any other activity on leased lands carried on by lessee, its agents or contractors in connection therewith.

3.15 Unit or Cooperative Plans.

3.15

a. For the purpose of more properly conserving the natural resources of any geothermal pool, field or like area, lessees under leases issued by the Board are authorized, with the written consent of the ~~Director~~ ^{Chairman}, to commit the State lands to unit, cooperative or other plans of development or operation with other State lands, Federal lands, ~~privately-owned lands~~ ^{or Indian lands}. Applications to unitize shall be filed with the ~~Director~~ ^{Chairman} who shall certify whether such plan is necessary or advisable in the public interest. He may require whatever documents or data he deems necessary. To implement such unitization, the Board may with the consent of its lessees modify and change any and all terms of leases issued by it which are committed to such unit, cooperative

~~or other plans of development or operations.~~

b. The agreement shall describe the separate tracts comprising the unit, disclose the apportionment of the production or royalties and costs to the several parties, and the name of the operator, and shall contain adequate provisions for the protection of the interests of all parties, including the State of ~~Idaho~~ ^{Idaho}. The agreement should be signed by or in behalf of all interested necessary parties before being submitted to the ~~Director~~ ^{Chairman}. It will be effective only after approval by the ~~Director~~ ^{Chairman}. The unit operator must be a person as defined by these rules and he must be approved by the ~~Director~~ ^{Chairman}.

c. The owners of any right, title or interest in the geothermal resources to be developed or operated under an agreement can be regarded as proper parties to a proposed agreement. All such owners must be invited to join as parties to the agreement. If any owner fails or refuses to join the agreement, the proponent of the agreement should declare this to the ~~Director~~ ^{Chairman} and should submit evidence of efforts made to obtain joinder of such owner and the reasons for nonjoinder.

d. In lieu of separate bonds required for each lease committed to a unit agreement, the unit operator may furnish and maintain a collective corporate surety bond or a personal bond conditioned upon faithful performance of the duties and obligations of the agreement and the terms of the leases subject thereto and these rules. Personal bonds shall be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bond and by a proper conveyance to the Director with full authority to sell such securities in case of default in the performance of the obligations assumed. The liability under the bond shall be for such amount as the ~~Director~~ ^{Chairman} shall determine to be adequate to protect the interests of the State of Idaho. Additional bond coverage may be required whenever deemed necessary by the ~~Director~~ ^{Chairman}. In case of changes of unit operator, a new bond must be filed or a consent of surety to the change in principal under the existing bond must be furnished.

e. Any modification of an approved agreement will require approval of the ~~Director~~ ^{Chairman} under procedures similar to those cited in paragraph ^a of this rule.

f. The term of all leases included in any cooperative or unit plan of development or operation shall be extended automatically for the term of such unit or cooperative agreement,

but in no event beyond that time provided in Rule ^{3.11} ~~6.0~~. Rentals or royalties on leases so extended shall be at the rate specified in the lease.

92
h

H. Any lease which shall be eliminated from any such cooperative or unit plan of development or operation, or any lease which shall be in effect at the termination of any such cooperative or unit plan of development or operation, unless relinquished, shall continue in effect for the term of the lease or for one year after its elimination from the plan or agreement or the termination thereof, whichever is longer, and so long thereafter as lessee engages in diligent and continuous drilling as provided in Rule 6.B, ~~or so long thereafter as geothermal resources are produced in paying quantities, but in no event beyond the time provided in Rule 6.C.~~ *3.11 Donis, see me for no. - 7.8*

W.C. I. Before issuance of a lease for lands within an approved unit agreement, the lease applicant or successful bidder will be required to file evidence that he has entered into an agreement with the unit operator for the development and operation of the lands in a lease if issued to him under and pursuant to the terms and provisions of the approved unit agreement, or a statement giving satisfactory reasons for the failure to enter into such agreement. If such statement is acceptable, he will be permitted to operate independently, but will be required to perform his operations in a manner which the ~~Director~~ *Manager* deems to be consistent with the unit operations.

~~Nothing in this rule shall excuse the parties to a unit agreement from procuring the approval of the Department of Water Resources pursuant to Section 42-4013, Idaho Code, if approval is required.~~

Explosion, collapse and underground hazards are to be included prior to initiation of operations to drill a well to 1,000 feet or deeper. Lessee shall evidence such additional coverage to the Chairman prior to initiation of drilling operations. If the land surface and improvements thereon covered by the lease have been sold or leased by the State of Hawaii, the owner or lessee of surface rights and improvements shall be a named insured. The State of Hawaii shall be a named insured in all instances. This policy or policies of liability insurance shall contain the following special endorsement:

"The State of Hawaii, the Hawaii State Board of Land and Natural Resources, the Chairman of the Board of Land and Natural Resources, the Department of Land and Natural Resources, and (herein insert name of owner or lessee of surface rights, if applicable) and the officers, employees and agents of each and every of the foregoing (hereinafter referred to as "additional insureds") are additional insureds under the terms of this policy, provided, however, the additional insureds shall not be insured hereunder for any primary negligence or misconduct on their part, but additional insureds shall be insured hereunder for secondary negligence or misconduct, which shall be limited to the failure to discover and cause to be corrected the negligence or misconduct of lessee, its agents or contractors. This insurance policy will not be cancelled without thirty (30) days prior written notice to the Hawaii Department of Land and Natural Resources. None of the foregoing additional insureds is liable for the payment of premiums or assessments on this policy."

No cancellation provision in any insurance policy shall be in derogation of the continuous duty of lessee to furnish insurance during the term of this contract. Said policy or policies shall be underwritten to the satisfaction of the Chairman. A signed complete certificate of insurance, with the endorsement required by this paragraph, shall be submitted to the Chairman prior to entry upon the leased land. At least thirty (30) days prior to the expiration of any such policy, a signed complete certificate of insurance, with the endorsement required by this paragraph, showing that such insurance coverage has been renewed or extended, shall be filed with the Chairman.

¹⁵
3.18 Hold Harmless.

Lessee shall expressly agree that the State of Hawaii, the Board, the Chairman, the Department, and the owner of the surface rights and improvements, if not the State of Hawaii, or State lessee of surface rights, if there be one, the officers, agents and employees of each and every one of the foregoing, shall be free from any and all liabilities and claims for damages and/or suits for or by reason of death or injury to any person or damage to property of any kind whatsoever, whether the person or property of lessee, its agents or employees, or third persons, from any cause or causes whatsoever caused by any occupancy, use, operation or any other activity on leased lands carried on by lessee, its agents or contractors, in connection therewith; and lessee shall covenant and agree to indemnify and to save harmless the State of Hawaii, the Board, the Chairman, the Department, owner or lessee of surface rights if there be one, and their officers, agents, and employees from all liabilities, charges, expenses (including counsel fees), and costs on account of or by reason of any such death or injury, damage, liabilities, claims, suits or losses.

3.19²⁰ Title.

The State of Hawaii does not warrant title to the leased lands or the geothermal resources and associated by-products which may be discovered thereon; the lease is issued only under such title as the State of Hawaii may have as of the effective date of the lease or thereafter acquire. If the interest owned by the State in the leased lands includes less than the entire interest in the geothermal resources and associated by-products for which royalty is payable, then the royalties provided for in the lease shall be paid to the State only in the proportion which its interest bears to said whole and undivided interest in said geothermal resources and associated by-products for which royalty is payable; provided, however, that the State is not liable for any damages sustained by the lessee, nor shall the lessee be entitled to or claim any refund of rentals or royalties therefore paid to the State in the event that the State does not own title to said geothermal resources and associated by-products, or if its title thereto is less than whole and entire.]

RULE 4

PROCEDURES FOR LEASING ON STATE LANDS

4.1 Competitive Leasing

Mining leases on State lands may be granted only on a competitive bid basis at public auction. Bidding will be on the amount of annual rental to be paid for the term of the lease based on an upset price established according to Rule 3.12b.

4.2 Application to Board; Filing Fee

as defined in these rules and regulations

Any person may apply for a geothermal mining lease on lands described in Rule 3.2. The applicant shall submit three copies of a written application on forms provided by the Department and all application forms must be completed in full, signed by the applicant or his authorized representative with proof of authorization, three (3) copies of all necessary exhibits, and the filing fee.

~~4.2 Lease Application Filing Fee.~~

Each application for a geothermal mining lease shall be accompanied by a nonrefundable filing fee in the amount of \$100.00.

3.19^{2nd}

If any claim is asserted or any action or proceeding instituted by any third party claiming title to ~~Said Leased Premises~~ ^{these lands} or any part thereof or any interest therein or in any production therefrom, adverse to the Division or in hostility to rights claimed in good faith by Lessee under this lease, then during the pendency of such controversy and until ninety (90) days after final determination thereof, Lessee may defer or discontinue all operations on ~~Said Leased Premises~~ ^{these lands}, or if it continues to operate, it may deposit royalties accruing hereunder, in respect to the production therefrom in any bank in the State of ~~Oregon~~ ^{Hawaii} qualified as a depository of State funds to abide the final determination of such controversy. The Division shall receive earned interest with principal upon prevailing in litigation. The Board

4.3 Lease Application Exhibits.

Each application for geothermal mining lease shall be accompanied by the following exhibits:

- a. An accurate description and map of the land desired to be leased.
- b. A Description of the known ^{or potential} geothermal resource, ^{desired to be leased for} exploration and development ^{preliminary survey}.
- c. A geologist's report on the surface and sub-surface geology, ^{known or potential} faulting, nature of the geothermal resource, surface water resources, and ground water resources; and ^{an assessment of the} ~~environmental impact~~ ^{probability of adverse effects from geothermal resource exploration and development; and} ~~and occurrence~~ ^{of the resource and}

d. Preliminary proposal of plan for geothermal exploration and development.

4.4 Public Notice of Lease Application

As soon as practicable after receipt of an application, the Board shall cause a notice to be published in a newspaper of general circulation in the county where the land nominated for leasing is located, at least once in each of three successive weeks, describing the land ~~and~~ ^{to} geothermal resource nominated for leasing.

4.5 Consideration of Application

Within six weeks from the date of the first publication of such notice, or such further time as may be reasonably necessary, the Board shall decide whether or not to lease the land and if deemed appropriate may modify the area sought of the application with its accompanying exhibits to be leased. ~~and shall either reject it with an explanation of the reasons for rejection or accept it for further consideration.~~ Prior to making its decision [whether or not to lease], the Board shall, where appropriate, evaluate fully the potential effect of geothermal ^{exploration and} development on the environment, fish and wildlife resources, aesthetics, populations, and other resources in the area. This evaluation will consider the potential impact of possible geothermal development and utilization including the construction of power generating plants and transmission facilities which may or may not be included in a mining lease. ~~As deemed appropriate, the Board shall consider the views and recommendations of other governmental agencies, organizations, industries and lease applicants, and shall consider all other potential factors such as the need of the land and its natural resources.~~ The need

for geothermal energy development and socio-economic conditions consistent with multiple-use management principles. The Board's decision whether or not to lease and selection of the area to be offered for lease shall be made after due notice of public hearing to all parties in interest.

4.6

4.8 Rejection of Lease Application

~~Upon receipt of all information requested and obtained by investigation, the Board, as soon as practicable, shall determine whether or not the proposed mining operation and lands to be leased would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land being applied for. If the Board determines that the existing or reasonably foreseeable future use of the land being sought for lease would be of greater benefit to the State than the proposed mining use of the land, it shall disapprove the application for a mining lease of the land without putting the land to auction.~~

4.7

4.8 Approval of [Mining] Lease by Public Auction

~~If the Board determines that the proposed mining use of the land would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land sought to be leased, the Board shall cause a notice of public hearing to be published in a newspaper of general circulation in the State at least once in each of three successive weeks, setting forth the description of the land, the existing or reasonably foreseeable future use of the land, the Board shall determine the area to be offered for lease and determine any special terms and conditions to be included in the lease to protect the environment, to permit use of the land for other purposes, and to protect other natural resources.~~

4.8. Public Notice of Lease Sale

When the Board has approved a mining lease to be offered for sale by competitive bidding at public auction, it shall cause a notice to be published in a newspaper of general circulation in the State and in the county where the land is located at least once in each of three successive weeks, setting forth the description of the lands, the geothermal rights to be leased, and the terms and conditions of the lease sale including upset rental rate and royalties. The notice will also indicate that the proposed plan of operation as required by Rule — must be filed before the lease can be issued.

sought to be leased, the Board has the option of approving the granting of the mining lease: (1) by public auction in accordance with Rule 5.2(b); (2) without public auction in accordance with Rule 5.3.

b. If the occupier or his assignee of the right to obtain a mining lease should fail to apply for a mining lease within six months from the date of notice from the Board of its finding that it is in the public interest that the geothermal resources in the reserved lands be mined, a mining lease shall be granted by public auction under Rule 4, ^{provided that} and the bidders at the public auction shall bid on an amount to be paid to the State for a mining lease granting to the lessee the right to develop the geothermal resources reserved to the State.

5.3 Approval of Mining Lease Without Public Auction.

The Board may, by the vote of 2/3 of ^{its} ~~the~~ voting members, grant a geothermal mining lease on reserved lands to the occupier thereof without public auction. Such a mining lease may be granted to a person other than the occupier if the occupier has assigned his rights to apply for a lease to another person, in which case only such an assignee may be granted a geothermal mining lease.

RULE 6

SURFACE RIGHTS AND OBLIGATIONS

6.1 Compensation to Occupiers.

a. The occupier of State or reserved lands leased by the Board shall be entitled to a reasonable rental from the mining lessee for the use of the surface for exploration and mining operations. Also, if the occupier suffers damage to his crops, his improvements, or the surface condition of the land caused by exploration and mining operations or by the failure of the mining lessee to properly restore the land after termination of operations, the occupier shall be reimbursed the full extent of the damages by the mining lessee; provided, that the occupier was not granted a mining lease without public auction as provided in Rule ~~5.2~~ 5.

b. Before entering upon the leased lands for exploration or mining operations, the lessee of a mining lease must complete a satisfactorily written agreement with any occupier concerning rentals and damages to be paid to the occupier due to any exploration or mining operations, ^{written notification of} and such agreement must be ^{sent to} approved by the Board.

c. However, any occupier of lands leased or to be leased by the Board shall have until thirty (30) days after the public auction of such lands, the option to notify the Board in writing of his or their desire to determine by arbitration the amount of rentals and damages to be paid to the occupier by the successful bidder or mining lessee. Such arbitration shall be in accordance with Chapter 658 of the Hawaii Revised Statutes.

6.2 Mining Lessee's Rights.

The lessee shall be entitled to use and occupy only so much of the surface of leased lands as may be required for all purposes reasonably incident to exploration for, drilling for, production and marketing of geothermal

(b) Nothing herein shall be construed to prevent the occupier from demanding and receiving rentals from the lessee of the mining lease or to forbid and prevent the occupier and the lessee from agreeing upon the amount of damages to be paid the occupier and the terms and conditions of payment. The occupier may in writing before or within thirty days after the public auction notify the board that he elects to have the amount of damages and the amount of rentals to be paid as a result of the mining lease determined by arbitration with the successful bidder. In such event, the occupier shall notify the successful bidder of his election to arbitrate, and the arbitration shall proceed in accordance with chapter 658. The arbitrators in fixing the amount of damages to be paid to the occupier shall award him the amount which in their judgment shall fairly compensate the occupier for the damages he may suffer to his crops or improvements or to the surface or condition of

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Revised
Statutes

4.9 Qualification Of Bidders

On or before twenty (20) days prior to the public auction, all bidders shall satisfy the Board of their financial ability to conduct ^{diligent} geothermal explorations and drill for and develop geothermal resources.

public auction. ~~Deposits on all but the winning bid shall be returned.~~ Three copies of the lease will be sent to the successful bidder who shall be required to execute them within 30 days ~~to pay the balance of the~~
Insert "A" The right to reject any and all bids is reserved to the Board. If the Board fails to accept the highest bid for the lease within 30 days after the date of the public auction all bids for that lease will be considered the rejected. Deposits on rejected bids shall be returned. ^{within two days} after the acceptance by the Board of the highest bid, the successful bidder shall pay to the Board the amount of the first year's rental bid and the \$500 deposit shall be credited against such amounts to qualify Board that a competitive lease sale.

RULE 5

PROCEDURES FOR LEASING ON RESERVED LANDS

5.1 Application to Board.

Applications for geothermal mining lease on reserved lands, that is, ~~lands owned or leased by any person in which the State has reserved to itself expressly or by implication the geothermal resources or right to mine geothermal resources, or both,~~ shall be made to the Board in accordance with Rule 4.1 through 4.6.

5.2 Approval of [Mining] Lease by Public Auction.

a. If an application for a geothermal mining lease on reserved lands has followed Rules 4.1 to 4.6 and the Board has determined that for such application the proposed geothermal mining use of the land would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land

4.10 Bidding Requirements.
on or before ~~thirty~~ ^{ten} days prior to ~~the public auction~~ ^{the public auction},
Each bidder shall submit to the Board
an application for a geothermal mining lease,
the filing fee ~~as~~ ^{required} by Rule 4.2, and deposit
with the Board a certified or cashier's check in the amount of \$500.
The Board shall ~~refuse~~ ^{refund} to unsuccessful bidders (such
amount) within two days after the public auction.

4.11 Award of Lease

The lease offered for bid shall be awarded
to the highest qualified bidder. ^(Insert A)
public auction. ~~Deposits on all but the winning bid shall be returned.~~ Three copies of the lease
will be sent to the successful bidder who shall
be required to execute them within 30 days
from delivery thereof to pay the balance of the
~~first year's rental~~, to file the required
bond or bonds, and to submit the proposed
plan of operation as required by Rule —. When
the three copies of the lease are executed by
the successful bidder and returned to the
Chairman, the lease will be executed by the
authorized officers of the Board and a copy will be
mailed to the lessee. If the successful bidder
fails to execute the lease or otherwise comply
with the applicable regulations, his deposit will be
forfeited. In this event, the land will be reoffered
when it is determined, in the opinion of the
Board that sufficient interest exists to justify
a competitive lease sale.

RULE 5

PROCEDURES FOR LEASING ON RESERVED LANDS

5.1 Application to Board

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a. If an application for a geothermal mining lease on reserved lands has
followed Rules 4.1 to 4.6 and the Board has determined that for such applica-
tion the proposed geothermal mining use of the land would be of greater benefit
to the State than the existing or reasonably foreseeable future use of the land

resources and associated by-products produced from the leased lands, including the right to construct and maintain thereon all works, buildings, plants, waterways, roads, communication lines, pipelines, reservoirs, tanks, pumping stations or other structures necessary to the full enjoyment and development thereof, consistent with a plan of operations and amendments thereto, as approved by the Chairman.

6.3 General Conditions.

~~a. A mining lease shall not be construed to prohibit the leasing of the leased lands by the Board to other persons for grazing and agricultural purposes, or for the mining of minerals other than geothermal resources; provided that the lessee under a mining lease shall have paramount right as against grazing and agricultural lessees to the use of so much of the surface of the land as shall be necessary for the purposes of the mining lease. All lessees shall have the right of ingress and egress at all times during the term of the lease.~~

a, b. Use of State lands under the jurisdiction and control of the Board are subject to the supervision of the Chairman. Use of State lands under the control of other State agencies are subject to the supervision of the appropriate State agency consistent with these rules.

b, c. The Board reserves the right to ^{lease,} sell or otherwise dispose of the surface of ^{State} the lands embraced within a mining lease, insofar as said surface is not necessary for use by the lessee in his exploration, development and production of the geothermal resources and associated by-products, but any ^{or other disposal} sale of surface rights made subsequent to execution of a mining lease shall be subject to ^{the right of the mining lessee.} all the terms and provisions of that lease during the life thereof. ^{lease, sale}

c, d. The Chairman shall be permitted at all reasonable times to go in and upon the leased lands and premises, during the term of a mining lease, to inspect the operations and the products obtained from the leased lands and to post any notice that the ^{Board} Chairman may deem fit and proper. ^{or his designated representative}

d, e. During operations, the lessee shall regulate public access and vehicular traffic to protect human life, wildlife, livestock and property from hazards associated with the operations. For this purpose, the lessee shall provide warnings, fencing, flagmen, barricades, well and hole coverings and other safety measures as appropriate. Restrictions on access must be approved by the Chairman as part of the Plan of Operations required under Rule 7.2.

e, f. The mining lessee shall reclaim all State lands disturbed by exploration, development, operation and marketing of geothermal resources in accordance with lease terms and all State and local laws and regulations, existing and hereafter amended. Lessee shall conserve, segregate, stockpile and protect topsoil to enhance reclamation. Lessee shall take all necessary steps in the exploration, development, operation and marketing of geothermal resources to avoid a threat to life or property or an unreasonable risk to subsurface surface or atmospheric resources.

Donis Note that "permit" and "permitted" are to be deleted throughout Rule 7

RULE 7

[EXPLORATION AND MINING OPERATIONS]

7.1 General Terms.

a. The operator of a lease ~~or a permit~~ shall conduct all operations in a manner that will conform to the best practices and engineering principles in use in the industry. Operations shall be conducted in such a manner as to protect the natural resources including without limitation, geothermal resources, and to obtain efficiently the maximum ultimate recovery of geothermal resources consistent with other uses of the land with minimal impact on the environment. Operations shall be conducted with due regard for the safety and health of employees. The operator shall promptly remove from the leased lands or store, in an orderly manner, all scraps or other materials not in use and shall notify the Chairman of all accidents within 24 hours and submit a written report within 30 days.

b. The operator of a lease ~~or permit~~ shall comply with and be subject in all respects to the conditions, limitations, penalties and provisions of the laws of the United State, the State of Hawaii and all valid ordinances of the city and counties applicable thereto.

c. The operator of a lease ~~or permit~~ shall take all reasonable precautions to prevent waste and damage to any natural resource including vegetation, forests, and fish and wildlife; injury or damage to persons, real or personal property; and degradation of the environment. The Chairman may inspect lessee's operations and issue such orders as are necessary to accomplish these purposes.

d. The Chairman is authorized to shut down any operation which he determines are unsafe or are causing or can cause pollution of the natural environment or waste of natural resources including geothermal resources upon failure by lessee to take timely, corrective measures previously ordered by the Chairman.

e. When required by the Chairman, the lessee shall designate a local representative empowered to receive service of civil or criminal process, and notices and orders of the Chairman issued pursuant to these rules.

f. In all cases where exploration or mining operations are not to be conducted by the lessee but are to be conducted under authority of an approved operating agreement, assignment or other arrangement, a designation of operator shall be submitted to the Chairman prior to commencement of operations. Such a designation will be accepted as authority of the operator or his local representative to act for the lessee and to sign any papers or reports required under these rules. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the Chairman.

7.2 Plan of Operations Required.

A lessee [or permittee] shall not commence operations of any kind [whether for exploration, observation, assessment, development or other related mining activities] prior to submitting to the Chairman and obtaining his approval of a Plan of Operations. Such a plan shall include:

- a. The proposed location and elevation above sea level of derrick, proposed depth, bottom hole location, casing program, proposed well completion program and the size and shape of drilling site, excavation and grading planned, and location of existing and proposed access roads.
- b. Existing and planned access, access controls and lateral roads.
- c. Location and source of water supply and road building material.
- d. Location of camp sites, air-strips and other supporting facilities.
- e. Other areas of potential surface disturbance.
- f. The topographic features of the land and the drainage patterns.
- g. Methods for disposing of waste material.
- h. A narrative statement describing the proposed measures to be taken for protection of the environment, including, but not limited to the prevention or control of (1) fires, (2) soil erosion, (3) pollution of the surface and ground water, (4) damage to fish and wildlife or other natural resources, (5) air and noise pollution, and (6) hazards to public health and safety during lease activities.
- i. All pertinent information or data which the Chairman may require to support the Plan of Operations for the utilization of geothermal resources and the protection of the environment.
- j. Provisions for monitoring deemed necessary by the Chairman to insure compliance with these rules for the operations under the plan.
- k. The information required above for items (a) through (f) may be shown on a map or maps of 1:24,000 scale or larger.

7.3 Amendments to Plan of Operations

An amended Plan of Operations shall be submitted to the Chairman's approval prior to any change, including deeper, plugging back a well, re-drilling, or construction of generating plants, buildings, pipelines, or other production, marketing or utilization of geothermal resources.

After completion of all operations authorized under any previously approved notice or plan, the lessee shall not begin to re-drill, repair, deepen, plug back, shoot, or plug and abandon any well, make casing tests, alter the casing or liner, stimulate production, change the method of recovering production, or use any formation or well for brine or fluid injection until he has submitted to the Supervisor in writing a new plan of operations and has received written approval from him. However, in an emergency a lessee may take action to prevent damage without receiving prior approval from the Supervisor, but in such cases the lessee shall report his action to the Supervisor as soon as possible.

7.4 Drilling Operations.

a. Upon commencement of drilling operations, the lessee [or permittee] shall mark each derrick and each completed well in a conspicuous place with his name or the name of the operator, the lease number and the number of the well. The lessee shall take all necessary means and precautions to preserve these markings.

drilling site

site

Chairman

b. The lessee ~~or permittee~~ shall diligently take all necessary precautions to keep all wells under control at all times; utilize trained and competent personnel; utilize properly maintained equipment and materials; and use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area.

c. When necessary or advisable, the Chairman shall require that adequate samples be taken and tests or surveys be made using techniques consistent with industry practices, without cost to the State of Hawaii, to determine the identity and character of geologic formations; the quantity and quality of geothermal resources; pressures, temperatures, rate of heat and fluid flow; and whether or not operations are being conducted in a manner of best interest of the public.

d. Before any work is commenced to abandon any well, notice shall be given by the operator to the Chairman, which notice shall show the condition of the well and the proposed method of abandonment. *unless otherwise specified in the plan of operation,* No well may be abandoned without prior approval of the Chairman. However, the operator of a lease ~~or permit~~ shall promptly plug and abandon any well that is not used or deemed useful by the Board. No production well shall be abandoned until its lack of capacity for further profitable production of geothermal resources has been demonstrated to the satisfaction of the Chairman. A producible well may be abandoned only after receipt of written approval by the Chairman. Equipment shall be removed, and premises at the well site shall be restored as near as reasonably possible to its original condition immediately after plugging operations are completed on any well except as otherwise authorized by the Chairman. *When* ~~Drilling~~ equipment shall not be removed from any well where ~~drilling operations have been suspended~~ without taking adequate measures to close the well and protect subsurface resources. Upon failure of lessee ~~or permittee~~ to comply with any requirements under this rule, the Chairman is authorized to cause the work to be performed at the expense of lessee ~~or permittee~~ and the surety. *temporarily*

7.5 Waste Prevention.

a. All mining leases shall be subject to the condition that the lessee will, in conducting his exploratory development and producing operations, use all reasonable precautions to prevent waste of geothermal resources and other natural resources found or developed in the leased lands.

b. The lessee shall, subject to the right to surrender the lease, diligently drill geothermal production wells on the leased lands as are necessary to protect the Board from loss by reason of geothermal production on other properties; or in lieu thereof, with the consent of the Chairman shall pay a sum determined by the Chairman as adequate to compensate the Board for failure to drill and produce any such wells on the leased lands. The lessee shall promptly drill and produce such other wells as the Chairman determines a reasonably prudent operator would drill in order that the lease be developed and produced in accordance with good operating practices.

c. The Chairman shall determine the value of production accruing to the Board where there is loss through waste or failure to drill and produce protection wells on the lease, and the compensation due to the Board as reimbursement for such loss. Payment for such losses will be paid when billed.

d. Subject to lessee's right to surrender the lease, where the Chairman determines that production, use or conversion of geothermal resources under a geothermal lease is susceptible of producing a valuable by-product or by-products, including commercially demineralized water contained in or derived from such geothermal resources for beneficial use in accordance with applicable State water laws, the Chairman shall require substantial beneficial production or use thereof, except where he determines that:

(1) Beneficial production or use is not in the interest of conservation of natural resources;

(2) Beneficial production or use would not be economically feasible; or

(3) Beneficial production and use should not be required for other reasons satisfactory to him.

7.6 Protection of Other Resources.

a. The lessee or permittee shall remove the derrick and other equipment and facilities within sixty (60) days after lessee or permittee has ceased making use thereof in its operations.

b. All permanent operating sites where required shall be landscaped or fenced so as to screen them from public view as far as possible. Such landscaping or fencing shall be approved in advance by the state and kept in good condition.

c. All drilling and production operations shall be conducted in such manner as to eliminate as far as practicable dust, noise, vibration, or noxious odors. Operating sites shall be kept neat, clean and safe. Drilling dust shall be controlled to prevent widespread deposition of dust. Detrimental material deposited on trees and vegetation shall be removed. The determination as to what is detrimental is a state responsibility.

d. Wastes shall be discharged in accordance with all Federal, State and local requirements and prohibitions.

e. Any operations disturbing the soil surface, including road building, construction, and movement of heavy equipment in support of or relating to specific geothermal exploration or development activities shall be conducted in such manner as will not result in unreasonable damage to trees and plant cover, soil erosion, or degradation of water resources of the State.

f. Existing roads ^{Except public roads} and bridges on or serving the area under lease or permit shall be maintained in a condition equal to or better than that before use. New roads and bridges shall be located, constructed, and maintained in accordance with State specifications.

g. Timber damaged, destroyed, or used on the area under lease or permit shall be compensated for at market value to the state. Borrow pit material shall not be obtained from state lands without permission and payment of market value.

h. Improvements, structures, telephone lines, trails, ditches, pipelines, water developments, fences and other property of the state or other lessees ~~or permittees~~ and permanent improvements and crops of surface owners, shall be protected from damage and repaired or replaced when damaged.

i. Access to drilling or production sites by the public shall be controlled by the lessee ~~or permittee~~ to prevent accidents or injury to persons or property.

The Chairman
j. Drilling mud shall be ponded in a safe manner and place, and where required by ~~the state~~, posted with danger signs, and fenced to protect persons or property.

k. Areas cleared and graded for drilling and production facility sites shall be kept to a reasonable number and size, and be subject to ~~State~~ approval.

Board
l. Lessee ~~or permittee~~ shall conduct its operations in a manner which will not interfere with the right of the public to use of public lands and waters.

7.7 Suspension of Operations.

In the event of any disaster or of pollution caused in any manner or resulting from operations under a lease ~~or permit~~, lessee ~~or permittee~~ shall suspend any drilling and production operations, except those which are corrective, or mitigative, and immediately and promptly notify the Chairman. Such drilling and production operations shall not be resumed until adequate corrective measures have been taken and authorization for resumption of operations has been made by the Chairman. The lessee ~~or permittee~~ shall suspend any drilling and production operations, except those which are corrective or mitigative, if the Board shall determine that there is a substantial likelihood that continued operations would endanger public health or safety or cause serious damage to property or the natural environment. Such operations shall not be resumed until the Board shall determine that adequate corrective measures are feasible and have been taken to eliminate such substantial likelihood.

7.8 Diligent Operations Required.

The ~~permittee or~~ lessee shall be diligent in the exploration or development of the geothermal resources on the ^{leased} lands ~~permitted or leased~~. Failure to perform diligent operations may subject the lease ~~or permit~~ to termination by the Board. Diligent operations mean exploratory or development operations on ~~or related to~~ the leased ~~or permitted~~ lands, including without limitation geochemical surveys, heat flow measurements, core drilling, or drilling of a test well. ~~A report of all exploratory development operations and expenditures must be submitted to the Chairman at the close of each lease ~~or permit~~ year.~~

Beginning with the sixth year of the primary lease term, and each year thereafter, exploratory development operations, to qualify as diligent development, must entail expenses during that year equal to at least ten times the lease rental for the same year. Exploratory development expenses incurred during any year of the primary lease term in excess of those required herein may be credited toward diligent exploration during subsequent years of the primary lease term.

7.9 Records and Reports.

a. [Production Records.] Lessee shall at all times maintain full and accurate records of production and payments relating to Lessee's operations and activities upon and in connection with said Leased lands Premises. All books and records of Lessee pertaining to or necessary in determining royalty payments shall be open to inspection at all reasonable times by the authorized representatives of the Division.

b. The lessee or permittee shall furnish to the Department for its confidential use the following in the manner and form prescribed:

~~(1) Statement showing the work performed upon the leased or permitted area and the amount, quality, and value of all geothermal resources produced, shipped or sold;~~

(2) Copies of all physical and factual exploration results, logs and surveys which may be conducted, well test data, and other data resulting from operations under the lease or permit. Such information shall be kept confidential for a period of one year from date of receipt, or longer in the discretion of the Board.

7.10 Surrender of Premises.

within 90 days from [At or before] the expiration of the lease or permit, the lessee or permittee shall restore the lands covered by said lease or permit to their original condition insofar as it is reasonable to do so, except for such roads, excavations, alterations or other improvements which may be designated for retention by the Board or any state agency having jurisdiction over the affected lands. Where determined necessary by the Board or such state agency, cleared sites and roadways shall be replanted with grass, shrubs or trees.

RULE 8

AMENDMENTS

These rules may be amended or repealed at any time by action of the Board, in accordance with Chapter 91 of the Hawaii Revised Statutes; provided, however, that any amendment to these rules changing the rental or royalty due the State of Hawaii or the term of leases shall not adversely affect leases outstanding upon the effective date of the amendment.

The Board of Land and Natural Resources on _____, 19____, approved and adopted these rules and regulations.

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

Approved this _____ day
of _____, 19____.

Governor of Hawaii

Approved as to form:

[Signature]
Deputy Attorney General

Dated: 3-15-76

REGULATION

Same as first page
~~ON THE LEASING OF GEOTHERMAL RESOURCES AND THE DRILLING~~
~~REGULATION OF GEOTHERMAL EXPLORATION, MINING AND LEASING~~
~~ON STATE AND RESERVED LANDS IN HAWAII~~
~~FOR GEOTHERMAL RESOURCES IN HAWAII~~

PART I - LEASING OF GEOTHERMAL RESOURCES

RULE NO. 1

GENERAL

1.1 Purpose.

ck
 The purpose of these regulations is to prescribe uniform procedures for issuing permits for geothermal exploration and granting leases for geothermal mining on lands under the jurisdiction of the Board of Land and Natural Resources, and to provide for the regulation of all drilling for geothermal resources in Hawaii in order to prevent waste and damage to geothermal resources to prevent damage to other natural resources, to prevent degradation of water resources, to protect the environment, and to prevent injury to life and property.

1.2 Authority.

These rules are promulgated pursuant to the jurisdiction and authority of the Board of Land and Natural Resources provided in Chapter 182 of the Hawaii Revised Statutes.

1.3 Incorporation by Reference.

Any document or part therein incorporated by reference herein is a part of these regulations as though set out in full.

1.4 Revision.

These regulations may be revised or repealed at any time by the Board in accordance with provisions of Chapters 91 and 182 of the Hawaii Revised Statutes. However, any revision to these regulations changing the rental or royalty due the State of Hawaii or changing the term of mining leases shall not adversely affect valid leases existing on the effective date of the revision.

1.5 Legal Conflicts.

Nothing in these regulations shall be construed as superseding Chapter 91, ~~Chapter~~ 182, ~~Chapter~~ 183-41, and ~~Chapter~~ 205, Hawaii Revised Statutes, as amended.

1.6 Definitions.

For purposes of these regulations, unless otherwise indicated herein by express term or by context, the term:

① "Geothermal resources" means the natural heat of the earth, the energy, in whatever form, below the surface of the earth present in, resulting from, or created by, or which may be extracted from, such natural heat, and all minerals in solution or other products

② "By-product" means (1) any mineral or minerals which are found in solution or developed in association with geothermal resources and which have a value not sufficient to warrant extraction and production by themselves and (2) commercially demineralized water.

"Commercial quantities" means quantities sufficient to provide a return after all variable costs of production have been met.

obtained from naturally heated fluids, brines, associated gases and steam, in whatever form, found below the surface of the earth, but excluding oil, hydrocarbon gas or other hydrocarbon substances.

① "Board" means the Hawaii Board of Land and Natural Resources.

② "Department" means the Hawaii Department of Land and Natural Resources.

③ "Chairman" means the Chairman of the Board of Land and Natural Resources.

④ "State lands" includes without limitation lands the surface rights to which are in the State of Hawaii and under the jurisdiction and control of the Board or under the jurisdiction and control of any other state body or agency, having been obtained from any source and by any means whatsoever.

⑤ "Reserved lands" means those lands owned or leased by any person in which the State or its predecessors in interest has reserved to itself expressly or by implication the mineral or right to mine minerals, or both, of such citizens.

⑦ "Person" means a United States citizen of legal age, or any firm, partnership, association or corporation which is qualified to do business in the State of Hawaii, and is not in default under the laws of the State of Hawaii, relative to qualifications to do business within this State, and governmental units.

⑥ "Occupier" means any person entitled to the possession of land under a certificate of occupation, a nine hundred and ninety-nine year homestead lease, a right of purchase lease, a cash freehold agreement, or under a deed, grant, or patent, and any person entitled to possession under a general lease, and also means and includes the assignee of any one of the above.

⑩ "Mining operations" means the process of drilling, extraction, and development of geothermal resources and any by-products, design engineering, other engineering, erection of transportation facilities and port facilities, erection of necessary structures, buildings, plants, and other necessary facilities connected with the development of geothermal resources.

⑪ "Lease" means a lease of the right to conduct geothermal mining operations on State lands and on other lands sold or leased by the State or its predecessors in interest with an expressed or implied reservation of mineral rights to the State.

⑫ "Mining lessee" means the person to whom a lease is granted and its successor in interest or assignee. It also means any agent of the mining lessee or an operator holding authority by or through the mining lessee. Unless the context indicates otherwise, "lessee" means "mining lessee".

⑬ "Operator" means the person having control or management of exploration or mining operations under lease or on the leased lands or a portion thereof. The operator may be the lessee, designated operator, or agent of the lessee or holder of rights under the lease.

⑭ "Well" means any well drilled for the purpose of exploration, discovery, observation, production, or injection of geothermal resources; or any converted producing well; or any reactivated or converted abandoned well.

⑮ "Unit agreement" means an agreement or plan of development and operation for the production and utilization of separately owned interests in the geothermal resources made subject thereto as a single consolidated unit without regard to separate ownership and which provides for the allocation of costs and benefits on a basis defined in the agreement or plan.

STATE OF HAWAII
BOARD OF LAND AND NATURAL RESOURCES
Honolulu, Hawaii
~~REGULATIONS~~
REGULATION OF GEOTHERMAL EXPLORATION, MINING AND LEASING
ON STATE AND RESERVED LANDS IN HAWAII

~~ON~~
LEASING OF GEOTHERMAL RESOURCES
~~AND~~
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diligent
generation
producing
mining

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State of Hawaii
BCLN
Honolulu

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STATE OF HAWAII
BOARD OF LAND AND NATURAL RESOURCES
Honolulu Hawaii

REGULATION NUMBER 0000

EXPLORATION, AND LEASING
REGULATION OF GEOTHERMAL MINING ON
STATE LANDS AND RESERVED LANDS IN HAWAII

[The Board of Land and Natural Resources, State of Hawaii, pursuant to the authority granted in the provisions of Chapter 182, Hawaii Revised Statutes, as amended, herewith adopt the following regulations relating to geothermal mining on State lands and on reserved lands within the State of Hawaii.]

Rule 1.
SECTION I. General

1.1 Purpose.

*-- * -- Center*
prescribe uniform
The purpose of these regulations is to ~~augment the provisions~~
~~procedures for issuing permits for geothermal exploration and leasing for~~
of Chapter 182, Hawaii Revised Statutes, as amended, "Reser-
~~vation and Disposition of Government Mineral Rights", relating~~
~~jurisdiction of the Board of Land and Natural Resources,~~
to geothermal mining on State lands and on lands in which
the State retains a mineral reserve.]

1.2 Scope.

These regulations shall be state-wide in application.]

1.3 Authority.

These rules are promulgated pursuant to the jurisdiction and
[The authority for the Board to dispose of geothermal mining
authority provided in chapter 182 of the Hawaii Revised
leases on State lands and on reserved lands, and to issue
statutes.
permits for geothermal exploration on such State lands and
mineral reserves is stated in Section ~~182-4, 182-5, and~~
182-6 of Hawaii Revised Statutes, as amended.]

of The Board of Land and Natural Resources

draft

draft

1.3
~~1.4~~

Incorporation by Reference.

Any document or part therein incorporated by reference herein is a part of this ^{etc} regulation, as though set out in full.

1.4
1.5

Revision

This regulation may be revised ^{or repealed at any time by the Board} in accordance with the provisions of Chapter 91 and ^{182 of the} Chapter 182-14, Hawaii Revised Statutes.

[as amended.] and in conformance with the Rules of Practice

1.5
1.6

and Procedure of the Board. ^{However, any revision to these regulations changing the rental or royalty due the state of Hawaii, or changing the term of mining leases shall not adversely affect leases existing at the effective date of the revision.}
Legal Conflicts.

Nothing in these regulations shall be construed as superceding

Chapter 91, Chapter 182, Chapter 183-41, and Chapter 205,

Hawaii Revised Statutes, as amended, [or the Rules of Practice and Procedure of the Board.]

1.6
1.7

[Regulatory] Definitions. For purposes of these regulations, unless otherwise indicated herein by express term or by context, the term:

- (a) "Geothermal resources" means the natural heat of the earth, the energy, in whatever form, below the surface of the earth present in, resulting from, or created by, or which may be extracted from, such natural heat, and all minerals in solution or other products obtained from naturally heated fluids, brines, associated gasses and steam, in whatever form, found below the surface of the earth, but excluding oil, hydrocarbon gas or other hydrocarbon substances.
- (b) "Board" means the ^{Hawaii} Board of Land and Natural Resources.
- (c) "Department" means the ^{Hawaii} Department of Land and Natural Resources.

Part 4

"Person" means a United States citizen of legal age, or any firm, association or corporation which is qualified to do business in the State of Hawaii, and is not in default under the laws of the State of Hawaii, relative to qualifications to do business within this State, and governmental units.

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- (d) "Chairman" means the Chairman of the Board of Land and Natural Resources.

(d) "Reserved lands" ^{includes} ~~means~~ ^{the surface rights to} those lands ~~owned or leased by~~ ~~which have been disposed of permanently, or under present~~ ~~any person in which the State or its predecessors in~~ ~~contract of sale, or under lease, but all subject to a~~ ~~interest has reserved to itself expressly or by impli-~~ ~~reservation to the State of Hawaii, expressly or by implication,~~ ~~of~~ ~~the minerals or right to mine minerals, or both,~~

(e) "State lands" ^{without limitation} ~~includes all public and other lands owned~~ ~~to which are in the State of Hawaii and under the jurisdiction and control~~ ~~or in possession, use and control of the then Territory~~ ~~of the Board or under the jurisdiction and control of any other~~ ~~of Hawaii or the State of Hawaii, or any of its agencies~~ ~~state bodies or agency, having been obtained from any source~~ ~~and this regulation shall apply thereto~~ ~~any by any means whatsoever.~~

- (g) "Occupier" means any person entitled to the possession of land under a certificate of occupation, a nine hundred and ninety-nine year homestead lease, a right of purchase lease, a cash freehold agreement, or under a deed, grant, or patent, and any person entitled to possession under a general lease, and also means and includes the assignee of any one of the above.

- (h) "Mining operations" means the process of ^{drilling} ~~excavation~~, extraction, and ~~removal~~ of all minerals, and the development of ^{any} ~~any and all~~ geothermal resources ^{and by-product} ~~from~~ ~~the ground~~, design engineering, other engineering, erection of transportation facilities and port facilities, erection of necessary ^{structures, buildings, and} plants, other necessary ^{facilities} ~~operations~~ [or development approved by the Board preceding or] connected with the ~~actual~~ extraction of minerals and the development of geothermal resources.

- (i) "Mining lease" means a lease of the right to conduct ^{geothermal} mining operations ~~including~~ geothermal resource develop-

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ment, ^{other} on state lands and on lands sold or leased by the State or its predecessors in interest with an ^{expressed or implied} reservation of mineral rights to the State.

(j) "Operator" means ^{the} any person ^{having control or management of} drilling, maintaining, ~~operating, and pumping or in control of any well.~~ ^{geothermal}

"Operator" includes "owner" when any well is or has been or is about to be operated by or under the direction of the owner.]

~~Draft~~ (k) "Owner" includes "operator" when any well is operated or has been operated or is about to be operated by any person other than the owner.]

^{k(1)} "Person" includes any individual, firm, association, corporation, or any other group or combination acting as a unit.

(d) "Well" means any well ^{driller} for the ^{purpose of exploration,} discovery ^{observation, production} of geothermal resources ^{or} any well on lands producing geothermal resources or reasonably presumed to contain geothermal resources; ~~or any special well;~~ converted producing well; ^{any} or reactivated or converted abandoned well; employed for reinjecting ^{into the subsurface} geothermal resources or the residue thereof.]

^m (d) "Exploratory well" means a well drilled for the discovery and/or evaluation of geothermal resources beyond the established limits of a designated geothermal field.

ⁿ (d) "Injection well" means any well drilled or converted for the specific use of injecting ^{into the subsurface} waste geothermal fluids or [disposal or injecting geothermal fluids or] other fluids for reservoir pressure maintenance or augmentation of reservoir fluids.

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(p) ^{Designated} "Geothermal field" means ^{an} ~~as~~ area, designated by the Board ^{one or more} [within an administrative boundary] ^{decided by the Board to be} which contains ~~a well~~ ^{or} wells, capable of commercial production of geothermal resources.

(q) "Development well" means a well drilled within the administrative boundary of ^{a designated} ~~an existing~~ geothermal field, for the commercial production of geothermal resources.

9
(r) "Completion". A well is considered to be completed thirty [30] days after drilling operations have ceased and the well is capable of producing a geothermal resource. [unless drilling operations are resumed before the end of the thirty-day period.]

✓
(s) "Drilling" means the actual drilling ^{or} ~~on~~ ^{redrilling} ~~or~~ [recompletion] of a well [for production or injection] including the running and cementing of casing and the installation of wellhead equipment. "Drilling" does not include perforating, logging, and related operations after the casing has been cemented.

✓
(t) "Suspension of operations" means the cessation of drilling, redrilling, or alteration of casing before the well is officially abandoned or completed. [All suspensions must be authorized by the Board.]

7
(u) "Notice" means an application for permission to do work on a well.

4
(v) "Drilling log" means the recorded description of the lithologic sequence encountered when drilling a well.

✓
(w) "BOPE" ^{means} is an acronym for blowout-prevention equipment.

draft-

draft

W
(x) "State Officers" means the Chairman and employees of the Department, ~~as~~ designated by the Board, ~~or by the~~ Chairman to represent the Department in the ^{administration} ~~application~~ of these regulations.

8. Delegation of Authority.

The Board may, and hereby does delegate such authority to the Chairman as is required to review and analyze notices and requests for exploratory permits, and for mining leases on State lands and State mineral reserves; to conduct public hearings authorized by the Board, or to appoint Masters of such public hearings; to prepare recommendations to the Board for disposition of exploratory permits, and mining leases; and for investigation and enforcement of applicable statutes, these regulations, and the terms and conditions of permits and leases.

Geothermal Policy.

1.7 With the adoption of these rules and regulations, it shall be the policy of the Board to encourage the ^{exploration, development and} use of geothermal resources in a manner that will provide for the optimum use of the land with appropriate protection of the environment and natural resources including geothermal, ground water, fish and wildlife and forests.

[1.9 Environmental Protection.]

RULES AND REGULATIONS ON GEOTHERMAL MINING

RULE NO. 2

GEOTHERMAL EXPLORATION PERMIT2.1 ~~Exploration Permit Required~~
Exploration Permit Required.

No person shall explore ^{any} by any means whatever on, in, or under ^{any} land ⁱⁿ owned by the State of Hawaii ^{or} on, in, or under lands owned or leased by any person in which which the State has reserved to itself expressly or by implication the geothermal minerals or mining rights ^{test} to detect ^{or} assess geothermal resources without a permit ^{or lease} issued pursuant to these regulations ^{and} under authority of Chapter 182, Hawaii Revised Statutes, as amended.]

2.2 Application for Exploration Permit

^{may apply for} Any person ^{wishing to obtain} an original, amended, or renewal ^{resources} geothermal resource exploration permit ^{by submitting} from the department shall submit ^{a written application to the} ~~at least three (3) copies of a geothermal exploration permit application on forms provided by the department.~~

All applications

application forms must be ~~completed in full~~ signed by the applicant ~~or his authorized representative with proof of authorization~~ and shall be accompanied by ~~three (3) copies of all necessary exhibits, M~~

. Maps shall be in reproducible form.

Any applicant may be required to show that all applicable State laws and regulations have been complied with up to the date of application.

2.3 ~~Permit Filing Fee~~ ^{non-refundable} ~~Each application shall be accompanied by a filing fee of \$100 in the amount~~

2.3 Permit Application Exhibits.

^{exploration permit} The applicant shall submit as exhibits to the application ~~form~~ the following:

- a. Evidence of insurance, naming the State of Hawaii and the applicant as co-insured, against liability for injury to the property and environment of the State of Hawaii, ~~and the~~ and the death or bodily injury of employees of the applicant. The amount of insurance coverage which must be evidenced is dependent upon the number of acres covered by the application, as follows:

- (1) ^{one} ~~Forty~~ ⁵⁰⁰ ~~acres~~ to ~~640~~ acres - \$20,000, \$40,000, \$20,000.

(2) Greater than ⁵⁰⁰640 acres - \$50,000, \$100,000, \$50,000

- b. A corporate surety bond of not less than \$1,000 conditioned upon compliance with all the terms on the expiration permit.
- c. A ^{plan of} description of applicant's ^{plan} expiration ^{describing} plan including, but not limited ^{planned} to ^{the} expiration methods, ^{temporary construction} dates of expiration, types of equipment to be used, size and number of vehicular and other equipment to be used, and ^{man power requirements} crew size.
- d. Detailed ^{and on} location and description of the area proposed for geothermal exploration, including terrain, vegetative cover, ^{soil cover} State land use designation, county zoning, ^{and} current land status ^{and occupiers, if any.}
- e. Appropriate tax key ^{maps} and USGS 7½-minute topographic quadrangle maps ^{and cities} clearly and accurately ^{showing} marked to indicate the proposed area of exploration.

2.4 Number of Permits Permit Limitations.

as to the number of permits
There are no limitations upon the number of contiguous acres to land which may be applied for.

2.5 Approval of Permit Application

The approval of an application for a geothermal exploration permit shall be conditioned upon, but not necessarily limited to, the following procedures:

- a. Upon receipt of an application for a geothermal exploration permit, the department shall cause copies of the application to be sent to the surface rights holder, ^{and local government} or occupier, and to affected State agencies including the Office of Environmental Quality Control, Department of Planning and Economic Development, the affected County Planning Department, and to such other agencies or persons that the department deems appropriate.

- b. The surface rights holder ^{or} occupier, and agencies shall be requested to respond within 30 days with a recommendation that the permit either be granted or denied. ^{The Department, surface rights holder, occupier,} Agencies may recommend conditions to be contained in the exploration permit to satisfy requirements within their respective statutory jurisdictions. ^{local} Applicants will be advised on conditions recommended by State and ^{or} County agencies and, when deemed advisable by the Department, a conference between agencies and applicant will be held.
- c. The department shall make such ^{other} investigations as it deems necessary.
- d. If a State agency other than the department ^{occupies the lands being applied for} holds the surface rights, such agency may ^{recommend against} refuse to grant a permit for geothermal exploration if it ^{shows good} has reason to believe that ^{by} a geothermal lease ^{development} ~~could not be issued~~ subsequent to exploration b ^{would not be in the best} exploration ^{because of considerations of environmental} [quality or other] public interests.

2.8 ^{Duration of} Geothermal Exploration Permit

Geothermal exploration permit shall expire ^{two} one year from date of issuance, ^{and at the} ~~discretion of the Board, may or may not be renewed for an additional~~ ^{two year} new permit may or may not be issued to replace an expiring permit.

2.8 ⁹ Non-Exclusive Permit

Geothermal exploration permits allow only non-exclusive access to land for geothermal exploration purposes.

2.8 ⁹ Department Investigation

The department may conduct scheduled and unscheduled inspections ^{and investigations} of operations conducted under geothermal exploration permits. [Upon receipt of a complaint concerning operation covered by an exploration permit, the department or its designated representative may make an investigation and collect facts and report opinions.]

¹⁰
2.9 Suspension of Permit

The chairman may issue an order immediately suspending operations ^{conducted under} ~~on~~ a geothermal ~~explo-~~
~~permit~~
exploration permit if:

- a. The permittee remains in ~~violation of~~ violation of the regulatory requirements of the department, the Office of Environmental Quality Control, the Hawaii Departments of Health, Labor and ~~Industria-~~
Industrial Relations, and Taxation, or
or other legally constituted authority, in excess of 30 days after notice in writing from the ~~appropriate~~
appropriate agency.
- b. The permittee is in violation of any exploration permit terms or conditions which, in the judgment of the chairman, jeopardizes the public health, safety, and welfare.

¹¹
2.10 Cancellation of Permit

The department may cancel a geothermal exploration permit if it finds, after notice to the permittee and allowance for an opportunity for hearing, that:

- a. Permit requirements are not being observed after notification to the permittee.
- b. False information was submitted in the application, application exhibits, or other required reports.

RULE NOL 3
 RULE NO. #
 RULE NO. 3

GEOHERMAL MINING
MINING LEASES

3.1 Geothermal Mining Lease Required.

No person shall drill for ^{exploratory development or} commercial ^{production; mine, operate, extract,} develop, ^{remove} or dispose of any geothermal resources from any land wn lands owned by the State or any lands owned by any person in which the State has reserved to itself, expressly or by implication, the minerals or the right to mine minerals, or both; without a mining lease issued under these rules and regulations.

3.2 Geothermal Resources Available ^{for leasing} ~~Policing~~.

All ^{State and reserved lands which the Board determines to have known} such ^{geothermal resources} shall be considered available for geothermal mining leases.

^{Exceptions} to such lands available for leasing include:

1. Lands that have no known geothermal resources.
2. Lands located more than five miles from a geothermal discovery well, or natural surface occurrence of geothermal resources.

^{O.K.} 1.3. ~~Lands designated as natural area reserve.~~

^{in its discretion} Lands that the Board may withdraw from availability for leasing in the ^{best} public interest, ^{such as withdrawing lands for research and development or pilot demonstration projects.}

3.3 Mining Leases by Public Auction.

3.14

All geothermal mining leases shall be ^{issued upon a bid basis} obtained by competitive ^{bidding} at public auction, except as provided in Rule 3.5.

^{3.5} Mining Leases Without Public Auction.

In the case of reserved lands, the Board may grant a geothermal mining lease without public auction to the occupier thereof or his assignee of the rights to obtain a mining lease if approved by two-thirds of the voting members of the Board; otherwise, by public auction as provided in Sections 182-4 and 182-5 and Rule 4 of these ^{Regulations} ~~Rules~~.

3.6
 3.5 Size of ^{Tract} Leaseable Land.

any contiguous areas of land not exceeding
 A Geothermal mining lease shall be limited to *ten square miles* per land.
~~The Board shall determine the area to be offered for a geothermal mining~~
 lease, except that, as provided in Section 182-8, *a mining lease shall be limited to*
~~not exceed~~ four square miles of contiguous land, *if its boundaries are such that its*
~~the area is more than~~ *or more than* six times the narrowest dimension.

^{3.7}
~~3.6~~ Assignment of Mining Leases.

(Insert Section 182-11 from chapt. 182 as par. "d" and then insert "X" next page)

A geothermal mining lease may be assigned in whole or in part, subject to the approval of the Board and terms and conditions specified in Section 182-11.

Rule 3-7--

^{3.8}
~~3.7~~ Revocation of Mining Leases.

A geothermal mining lease may be revoked if the lessee fails to pay rentals when due or if any of the terms of the lease or of law are not complied with, or if the lessee wholly ceases all mining operations without the written ~~consent~~ of the Board for other than reasons of force majeure or the uneconomic operation of the mining lease for a period of one year. However, the Board shall give the lessee notice of any default and the lessee shall have six months from the ~~ate~~ date of the notice to remedy the default before revocation of the lease.

^{3.9}
~~3.8~~ Surrender of Mining Leases.

Any lessee ^a lessee of the geothermal mining lease, who has complied fully with all the terms, covenants, and conditions of the existing lease, may, with the consent of the Board surrender at any time and from time to time all or any part of the mining lease or the land contained therein upon payment as consideration therefor two years' rent prorated upon the portion of the lease or land surrendered. And as otherwise specified in Section 182-15. The geothermal mining lease

A geothermal mining lease may also be surrendered if as a result of a final determination by a court of competent jurisdiction, the lessee is found to have acquired no rights in or to the minerals on reserved lands, nor the right to exploit the same as provided in Section 182-13.

^{13.0}
~~6.9~~ Number of Mining Leases.

There shall be no limit upon the number of geothermal mining leases that may be granted to any person undertaking any geothermal mining operation, as specified in Section 182-8, *Chapter 182, Hawaii Revised Statutes,*

"Insert 3.7"

"Insert 3.7"

Insert 3.7
This was page
A total or partial assignment of a lease must be approved in writing by the ~~Director~~ and no assignment shall be effective until written approval is given. An assignment shall take effect the first day of the month following the approval of the assignment.

B. A lease may be assigned as to all or part of the acreage included therein to any person qualified to hold a State lease, provided that neither the assigned nor the retained part created by the assignment shall contain less than 40 acres. No undivided interest in a lease of less than 10% shall be created by assignment.

C. In an assignment of the complete interest in all of the lands in a lease, the assignor and his surety shall continue to be responsible for performance of any and all obligations under the lease until the effective date of the assignment. After the effective date of any assignment, the assignee and his surety shall be bound by the terms of the lease to the same extent as if the assignee were the original lessee, any conditions in the assignment to the contrary notwithstanding.

D. An assignment of the record title of the complete interest in a portion of the lands in a lease shall clearly segregate the assigned and retained portions. After the effective date, the assignor is released and discharged from any obligations thereafter accruing with respect to the assigned lands. Such segregated leases shall continue in full force and effect for the primary term of the original lease or as further extended pursuant to the terms of these rules.

E. Where an assignment does not segregate the record title to the lease, the assignee, if the assignment so provides, may become a joint principal on the bond with the assignor. The application must also be accompanied by a consent of assignor's surety to remain bound under the bond of record, if the bond, by its terms, does not contain such consent. If a party to the assignment has previously furnished a statewide bond, no additional showing by such party is necessary as to the bond requirement.

F. An assignment must be a good and sufficient legal instrument, properly executed and acknowledged, and should clearly set forth the serial number of the lease, the land involved, the name and address of the assignee, the interest transferred and the consideration. A fully executed copy of the instrument of assignment must be filed with the application for approval. An assignment must effect or concern only one lease or a portion thereof, except for good cause shown.

G. The application for approval of an assignment must be on forms provided by the Department and exact copies. It must be accompanied by a signed statement by the assignee either (1) that he is the sole party in interest in the assignment, or (2) setting forth the names and qualifications of the other parties taking an interest in the lease. Where the assignee is not the sole party in interest, separate statements must be signed by each of the other parties and by the assignee setting forth the nature and extent of the interest of each party and the nature of the agreement between them. If payments out of production are reserved, a statement must be submitted stating the details as to the amount, method of payment, and other pertinent items. These separate statements must be filed in the office of the Department in Boise not later than fifteen (15) days after the filing of the application for approval.

H. Unless the lease account is in good standing at the time the assignment is reached for action, the request for approval of the assignment will be denied, and the lease shall be subject to termination in accordance with these rules.

I. All applications for approval of assignments must be accompanied by a fee of \$10.00 for each assignment.

\$10.00

3.10 Geothermal Mining Lease Terms.

3.11

The terms and conditions of all geothermal mining leases shall be determined and approved by the Board as provided in Chapter 182 and as to B ^{in addition} the Board may deem

appropriate or in the public interest.

3.12 Duration of3.11 Geothermal Mining Leases

a. The term of a geothermal mining lease shall be ^{primary} ~~determined by the Board~~ ^{ten years} ~~but in no case shall exceed 65 years.~~

^{from the effective date of the lease}
The effective date of the lease shall be the first day of the month in which the lease is auctioned or in which the Board formally approves the issuance of a lease.

^{insert add'l} b. If, at the expiration of the primary term of the lease, geothermal resources are not being produced or demonstrably capable of being produced from the leased land, but the lessee is actively engaged in drilling operations to 1,000 feet or deeper, then the lease shall continue in force so long as drilling operations are being diligently and continuously prosecuted on the leased land or upon lands with which the leased land is unitized. Drilling operations shall be considered to be diligently and continuously prosecuted if not more than 120 days shall elapse between the completion or abandonment of one well and the beginning of operations for the drilling of another well. For good cause shown, the ^{Chairman} ~~Director~~ may extend the time for an additional period, not to exceed 120 days. A written request must be received by the ^{Chairman} ~~Director~~ at least 10 calendar days before the expiration of the initial 120 day period.

c. If, ^{at the expiration of the primary term of the lease} ~~if~~ geothermal resources are produced or utilized in paying quantities ^{3.11 lease} ~~within the primary term of the lease or as extended under Rule 6.3.~~ that lease shall continue for so long thereafter as geothermal resources are produced or utilized in paying quantities, but the lease shall in no event continue for more than ⁵⁵ ~~40~~ years after the end of the primary term. The lessee

~~15.2~~ Production or utilization of geothermal resources in paying quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal resources for delivery to or utilization by a facility or facilities not yet installed, but scheduled for installation.

d. Lessee shall use due diligence to market or utilize geothermal resources in paying quantities. If leased land is capable of producing geothermal resources in paying quantities, but production is shut-in, the lease shall continue in force upon payment of rentals for the duration of the primary term or five (5) years after shut-in, whichever is longer. If the Director determines that the lessee is proceeding diligently to acquire a contract to sell or to utilize the production or is progressing with installations needed for production, the lease shall continue in force for an additional five (5) years, upon payment of rentals, otherwise the lease may be terminated by the Board. The ^{Chairman} ~~Director~~ shall continue to review shut-in leases every five (5) years until production and payment of royalties takes place or the lease is terminated by the Board for lessee's lack of due diligence or surrendered by the lessee.

e. A lease that has been extended by reason of production or utilization of geothermal resources and which has been determined to be incapable of further commercial pro-

3.13
RULE 7 - RENTALS

Hawaii
a. Lessee shall pay to the State of Idaho in advance each year an annual rental for each acre or fraction thereof under lease. The annual rental for the first year of the term shall be due and payable and shall be received in the offices of the Department in Boise, together with a lease agreement executed by lessee within thirty (30) days of the date of notice of approval or award. The Department will notify the applicant or his representative designated in the application to lease by certified or registered mail of the Board's approval of a lease and specify the exact amount of rental due thereon and the bond requirement under Rule 20. Failure to return an executed lease

together with the first year rental and bond within thirty (30) days shall result in automatic rejection of the application without further action of the *Chairman* Director or Board. Second year and subsequent rental payments must be received in the office of the Department in Boise on or before the anniversary date of the lease. Failure to pay exact rental shall constitute grounds for immediate termination of the lease by the *Chairman* Director who shall note the termination on the official records of the Department.

at the price bid at public auction based on an upset bid
b. Annual rentals for each acre or fraction thereof under lease shall be as follows:

- to be paid in advance*
- \$1.00/yr. - for the first five (5) years;
 - \$2.00/yr. - for the second five (5) years;
 - \$3.00/yr. - thereafter;

which rental shall be deducted from production royalties as they accrue during that lease year, if there be any. The rental shall not be recoverable from future production.

3.14
RULE 8 - ROYALTIES

Hawaii
a. The lessee shall cause to be paid to the State of Idaho the following royalties on the value of geothermal production from the leased premises:

(1) A royalty of 10 per centum of the amount or value of geothermal resources, or any other form of heat or energy derived from production under the lease and sold or utilized by the lessee or reasonably susceptible to sale years of use or utilization by the lessee, unless used or consumed by lessee in his production operations; or

(2) A royalty of 5 per centum of the amount or value of any associated by-product derived from production under the lease and sold or utilized or reasonably susceptible of sale years of use or utilization by the lessee, including commercially demineralized water, except that no payment of a royalty will be required be due and payable on such water if it is used in plant operation for cooling or in the generation of electric energy or otherwise. No royalty shall be paid for associated by-products used or consumed by lessee in his production operations.

b. The value of geothermal production from the leased premises for the purpose of computing royalties shall be the following:

AAr

- (1) The total consideration accruing to the lessee from the sale thereof in cases where geothermal resources are sold by the lessee to another party in an arms-length transaction; or
- (2) The value of the end product attributable to the geothermal resource produced from a particular lease where geothermal resources are not sold by the lessee before being utilized, but are instead directly used in manufacturing power production, or other industrial activity; or
- (3) When a part of the resource only is utilized by the lessee and the remainder sold, the sum of (1) and (2) immediately above.

c e. Lessee shall within 15 days notify the ~~Director~~ ^{Chairman} of the discovery upon the leased premises of geothermal resources before any such geothermal resources are used or removed for commercial purposes from the leased land or utilized thereon.

d f. Royalties will be due and payable monthly in the office of the Department in ~~Honolulu~~ ^{Honolulu} on or before the last day of the calendar month following the month in which the geothermal resources and/or their associated by-products are produced and utilized or sold.

e e. The lessee shall file with the ~~Director~~ ^{Chairman} within thirty (30) days after execution a copy of any contract for the disposal of geothermal resources from the lease. Reports of sales or utilization by lessee and royalty for each productive lease must be filed each month once production begins, even though production may be intermittent, unless otherwise authorized by the ~~Director~~ ^{Chairman}. Total volumes of geothermal resources produced and utilized or sold, including associated by-products, the value of production, and the royalty due the State of ~~Ia~~ ^{Hawaii} must be shown. This report is due on or before the last day of the month following the month in which production was obtained and sold or utilized, together with the royalties due the State of ~~Ia~~ ^{Hawaii}.

f f. The lessee shall measure or gauge all production in accordance with methods approved by the ~~Director~~ ^{Chairman}. The quantity and quality of all production shall be determined in accordance with the standard practices, procedures and specifications generally used in industry. All measuring equipment shall be tested ~~consistent~~ ^{consistent} with industry practice and, if found defective, the ~~Director~~ ^{Chairman} will determine the quantity and quality of production from the best evidence available.

g e. The lessee shall periodically furnish the ~~Director~~ ^{Chairman} the results of periodic tests showing the content of by-products in the produced geothermal resources. Such tests shall be taken as specified by the ~~Director~~ ^{Chairman} and by the method of testing approved by him, except that tests not consistent with industry practice shall be conducted at the expense of the State of ~~Ia~~ ^{Hawaii}.

h w. The ~~Director~~ ^{Board} may authorize a lessee to commingle production from wells on his lease with production from other leases held by him or by other lessees subject to such conditions as he may prescribe, but lessee shall not do so without the ~~Director's~~ ^{Board's} approval.

3.15 Overriding Royalty Interests

a.A. Overriding royalty interests in geothermal leases constitute accountable acreage holdings under these regulations.

If an overriding royalty interest is created which is not shown in the instrument of assignment or transfer, a statement must be filed with the ~~Director~~ *Chairman* describing the interest. Any such assignment will be deemed valid if accompanied by a statement over the assignee's signature that the assignee is a person as defined in these rules and that his interests in geothermal leases do not exceed the acreage limitations provided in these rules. All assignments of overriding royalty interests without a working interest and otherwise not contemplated by Rule 21, must be filed for record in the office of the Department in Boise within ninety (90) days from the date of execution. Such interests will not receive formal approval.

b.B. No overriding royalty on the production of geothermal resources created by an assignment contemplated by Rule 21 or otherwise shall exceed 5 percent nor shall an overriding royalty, when added to overriding royalties previously created, exceed 5 percent.

c.C. The creation of an overriding royalty interest that does not conform to the requirements of this rule shall be deemed a violation of the lease terms, unless the agreement creating overriding royalties provides for a prorated reduction of all overriding royalties so that the aggregate rate of overriding royalties does not exceed 5 percent.

d.D. In addition to the foregoing limitations, any agreement to create or any assignment creating royalties or payments out of production from the leased lands shall be subject to the authority of the ~~Director~~ *Chairman*, after notice and hearing, to require the proper parties thereto to suspend or modify such royalties or payments out of production in such manner as may be reasonable when and during such periods of time as they may constitute an undue economic burden upon the reasonable operations of such lease.

RULE 23 - UNIT OR COOPERATIVE PLANS OF DEVELOPMENT OR OPERATION:

A. For the purpose of more properly conserving the natural resources of any geothermal pool, field or like area, lessees under leases issued by the Board are authorized, with the written consent of the Director, to commit the State lands to unit, cooperative or other plans of development or operation with other State lands, Federal lands, privately-owned lands or Indian lands. Applications to unitize shall be filed with the Director who shall certify whether such plan is necessary or advisable in the public interest. He may require whatever documents or data he deems necessary. To implement such unitization, the Board may with the consent of its lessees modify and change any and all terms of leases issued by it which are committed to such unit, cooperative

3.16 Bond Requirements.

RULE 26 BOND REQUIREMENTS:

4. a. Performance Bonds:

~~4. a.~~ Concurrently to the execution of the lease by the lessee, lessee shall furnish to ^{Chairman} Director a good and sufficient bond in the amount of Two Thousand Dollars (\$2,000.00) in favor of the State of ^{Idaho} Idaho, conditioned on the payment of all damages to the land surface and all improvements thereon, including without limitation crops on the lands, whether or not the lands under this lease have been sold or leased by the Board for any

other purpose; conditioned also upon compliance by lessee of his obligations under this lease and these rules. Prior to initiation of operations to drill a well for any purpose to 1,000 feet or deeper, lessee shall increase such bond to the amount of Ten Thousand Dollars (\$10,000.00). The ^{Chairman} Director may require a new bond in a greater amount at any time after operations have begun, upon a finding that such action is reasonably necessary.

4. b. "Statewide" Bond:

~~4. b.~~ In lieu of the aforementioned bonds, lessee may furnish a good and sufficient "statewide" bond conditioned as above in the amount of Fifty Thousand Dollars (\$50,000.00) in favor of the State of ^{Idaho} Idaho, to cover all lessee's leases and operations carried on under all Geothermal ^{mining} Resources leases issued and outstanding to lessee by the Board at any given time during the period when the "statewide" bond is in effect.

4. c. Duration of Bonds:

~~4. c.~~ The period of liability of any bond will not be terminated until all lease terms and conditions have been fulfilled and the bond is released in writing by the ^{Chairman} Director.

4. d. Operator's Bond:

~~4. d.~~ An operator, or, if there is more than one for different portions of the lease, each operator, may furnish a general lease bond of not less than Ten Thousand Dollars (\$10,000.00) in his own name as principal on the bond in lieu of the lessee. Where there is more than one operator's bond affecting a single lease, each such bond must be conditioned upon compliance with all lease terms for that portion of the leasehold for which each operator is responsible.

~~4. e.~~ Where a bond is furnished by an operator, suit may be brought thereon without joining the lessee if he is not a party to the bond.

B.17. Liability Insurance

Prior to entry upon the leased lands [for other than casual exploration or inspection as contemplated by Rule 14.A.] lessee shall cause to be secured and to be thereafter maintained in force during the term of this lease, public liability and property damage insurance and products liability insurance in the sum of Two Hundred and Fifty Thousand Dollars (\$250,000) for injury or death for each occurrence; in the aggregate sum of Five Hundred Thousand Dollars (\$500,000) for injury or death; and in the sum of One Hundred Thousand Dollars (\$100,000) for damages to property and products damage caused by any occupancy, use, operations or any other activity on leased lands carried on by lessee, its agents or contractors in connection therewith. Explosion, collapse and underground hazards are to be included prior to initiation of operations to drill a well to 1,000 feet or deeper. Lessee shall evidence such additional coverage to ~~Director~~ ^{Chairman} prior

to initiation of drilling operations. If the land surface and improvements thereon covered by the lease have been sold or leased by the State of ~~Idaho~~ ^{Hawaii}, the owner or lessee of surface rights and improvements shall be a named insured. The State of ~~Idaho~~ ^{Hawaii} shall be a named insured in all instances. This policy or policies of liability insurance shall contain the following special endorsement:

"The State of ~~Idaho~~ ^{Hawaii} the ~~Idaho~~ ^{Hawaii} State Board of Land ~~Commissioners~~ ^{and Natural Resources}, the ~~Director~~ ^{Chairman} of the Department of Lands, ~~the~~ ^{Id.} Department of Lands and Nat'l Res., and (herein insert name of owner or lessee of surface rights, if applicable) and the officers, employees and agents of each and every of the foregoing (hereinafter referred to as "additional insureds") are additional insureds under the terms of this policy, provided, however, the additional insureds shall not be insured hereunder for any primary negligence or misconduct on their part; but additional insureds shall be insured hereunder for secondary negligence or misconduct, which shall be limited to the failure to discover and cause to be corrected the negligence or misconduct of lessee, its agents or contractors. This insurance policy will not be cancelled without thirty (30) days prior written notice to the Idaho Department of Lands. None of the foregoing additional insureds is liable for the payment of premiums or assessments on this policy."

No cancellation provision in any insurance policy shall be in derogation of the continuous duty of lessee to furnish insurance during the term of this contract. Said policy or policies shall be underwritten to the satisfaction of the ~~Director~~ ^{Chairman}. A signed complete certificate of insurance, with the endorsement required by this paragraph, shall be submitted to the ~~Director~~ ^{Chairman} prior to entry upon the leased land. At least thirty (30) days prior to the expiration of any such policy, a signed complete certificate of insurance, with the endorsement required by this paragraph, showing that such insurance coverage has been renewed or extended, shall be filed with the ~~Director~~ ^{Chairman}.

3.18

3.18 Hold Harmless

RULE 28 - HOLD HARMLESS.

Lessee shall expressly agree that the State of Idaho, State Board of Land Commissioners, the Director of the Department of Lands, the Department of Lands, and the owner of the surface rights and improvements, if not the State of Idaho, or State

lessee of surface rights, if there be one, the officers, agents and employees of each and every of the foregoing, shall be free from any and all liabilities and claims for damages and/or suits for or by reason of death or injury to any person or damage to property of any kind whatsoever, whether the person or property of lessee, its agents or employees, or third persons, from any cause or causes whatsoever caused by any occupancy, use, operation or any other activity on leased lands carried on by lessee, its agents or contractors, in connection therewith; and lessee shall covenant and agree to indemnify and to save harmless the State of Idaho, State Board of Land Commissioners, the Director of the Department of Lands, the Department of Lands, owner or lessee of surface rights if there be one, and their officers, agents, and employees from all liabilities, charges, expenses (including counsel fees), and costs on account of or by reason of any such death or injury, damage, liabilities, claims, suits or losses.

RULE 29 - TITLE

3.18 Title

The State of Idaho does not warrant title to the leased lands or the geothermal resources and associated by-products which may be discovered thereon; the lease is issued only under such title as the State of Idaho may have as of the effective date of the lease or thereafter acquire. If the interest owned by the State in the leased lands includes less than the entire interest in the geothermal resources and associated by-products for which royalty is payable, then the royalties provided for in the lease shall be paid to the State only in the proportion which its interest bears to said whole and undivided interest in said geothermal resources and associated by-products for which royalty is payable; provided, however, that the State is not liable for any damages sustained by the lessee, nor shall the lessee be entitled to or claim any refund of rentals or royalties therefore paid to the State in the event that the State does not own title to said geothermal resources and associated by-products, or if its title thereto is less than whole and entire.

RULE 30 - IMPOSSIBILITY OF PERFORMANCE:

3.19 Impossible Performance

Whenever, as a result of any cause beyond lessee's control, including without limitation, fire, flood, windstorms, or other act of God; law, order or regulation of any governmental agency, or inability to secure men, material or transportation, it becomes impossible for lessee to perform or to comply with any obligation under a lease other than payment of rentals, the Director may by written order excuse lessee from damages or forfeiture of the lease and lessee's obligations shall be suspended so long as the Director finds that good cause exists; provided, however, that nothing herein shall extend the term of the lease.

continuation of rule 4-

RULE 4

PROCEDURES FOR LEASING ON STATE LANDS

4.1 Application to the Board

Any person may apply for a geothermal mining lease on lands described in Rule 3.2, ^{in the opinion of the Board} provided that a geothermal resource has been discovered or is known to exist on such land.] The applicant shall submit three copies of a written application on forms provided by the Department and all application forms must be completed in full, signed by the applicant or his authorized representative with proof of authorization, three (3) copies of all necessary exhibits, and the filing fee.

4.2 Filing Fee. ^{Lease Application}

^{nonrefundable} Each application for a geothermal mining lease shall be accompanied by a filing fee of \$100, ^{which is non-refundable} ~~nonrefundable~~. ^{in the amount}

4.3 Lease Application Exhibits.

Each application for geothermal mining lease shall be accompanied by the following exhibits:

- a. An accurate description and map of the land desired to be leased.
- b. Description of the ^{known} geothermal resource.
- c. A geologist's report on the surface and sub-surface geology, faulting, nature of the geothermal resource, surface water resources, ^{and} ground water resources, and opinion on probability of ^{adverse effects} subsidence resulting from geothermal resource development.
- d. A detailed ^{description of} report on the proposed geothermal mining and development proposed for leasing; proposals for monitoring and surveillance of the mining development, and ^{drilling,} environmental impact assessment.
- e. ^{and} An assessment of the environmental impact of the mining proposal.
- f. A copy of a valid geothermal exploration permit issued to the applicant for the area sought to be leased.
- g. Such other information as the Department advises the applicant to be necessary.

4.4 Incomplete Application.

Applications which are incomplete as to identity of applicant, ~~signature~~ ^{accompanied by} of applicant, ~~do not include~~ ^{accompanied by} the established filing fee, or ~~do not include~~ all of the required application exhibits shall be returned to the applicant with an explanation of the reasons for incompleteness.

4.5 Consideration of Application.

Upon receipt by the Department of a ^{satisfactorily} properly completed notice of application for geothermal mining lease, the Board shall consider the merits of the ~~notice of~~ application and ^{its} accompanying exhibits and shall either reject it with an explanation of the reasons for rejection or accept it for further consideration.

4.6 Consideration by Others.

If the notice

The acceptance of an application for further consideration by the Board shall include, but not necessarily be limited to, the following procedures:

- a. Upon acceptance of an application for further consideration by the Board, the Department shall cause copies of the application with accompanying exhibits to be sent ^{to} to the surface rights holder or occupier and to affected State and County agencies including the Office of Environmental Quality Control, Department of Planning and Economic Development, Department of Health, the affected County Planning Department, and to such other agencies or persons that the Board deems appropriate.
- B. The surface rights holder or occupier and agencies shall be requested to respond within 30 days with a recommendation for or against the applicant's mining lease proposal. Agencies may also recommend conditions to be contained in the lease ^{to} satisfy requirements within their respective statutory jurisdiction. Such conditions recommended by affected agencies may, if the Board deems appropriate, be made a part of any lease granted.
- c. The Department shall make any ^{other} investigations it deems appropriate.

- d. I a
If a State agency other than the Department holds the surface rights, such agency may recommend ^{to the Board} against granting of the proposed mining lease because of consideration of environmental quality or other public interests.

4.7 Public Notice of Lease Application.

Upon preliminary acceptance of an application for a geothermal mining lease as stated in Rule 4.5, the Board shall cause a notice to be published in the newspaper of general circulation in the County where the lands are located, at least once in each of three successive weeks describing the lands for which a mining lease is requested, the geothermal resources desired to be leased, and the applicant's proposed mining operations. The public shall also be notified of its opportunity to review the applicant's ~~notice of~~ application for a geothermal mining lease and submit written comments to the Department.

4.8 Rejection of Lease Application.

Upon receipt of all information requested and obtained by investigation, the Board, as soon as practicable, shall determine whether or not the proposed mining operation and lands to be leased would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land being applied for. If the Board determines that the existing or reasonably foreseeable future use of the land being sought for lease would be of greater benefit to the State than the proposed mining use of the land, it shall disapprove the application where mining lease of the land without putting the land to auction.

4.9 Approval of Public Auction of Mining Lease.

If the Board determines that the proposed mining use of the land would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land sought to be auctioned, the Board shall cause a notice of public auction to be published in a newspaper of general circulation in the State at least once in each of three successive weeks, setting forth the description of the land, the minerals to be leased, and the time and place of the auction. At least 30 days prior notice shall be given.

4.10 Public Auction of Mining Lease.

The Board shall determine to be offered for a geothermal mining lease and may modify the boundaries of the land area sought to be leased, after due noticed public hearing to all =

all parties and interests. The Board shall approve the mining lease to be offered by public auction and shall set the terms and conditions of the lease as provided in Chapter 183

182 and as it may deem appropriate. Bidders shall bid on the amount of annual rent to ^{additionally} for each acre or fraction thereof rental to be paid for the term of the mining lease based on an upset price ~~fixed by the Board.~~

as follows:

\$1.00 per year per acre - for the first five years;
 \$2.00 per year per acre - for the second five years;
 \$3.00 per year per acre - Thereafter

RULE 5

PROCEDURES FOR LEASING ON RESERVED LANDS

5.1 Application to the Board.

Applications for geothermal mining lease on reserved lands, that is, lands owned or leased by any person in which the State has reserved to itself expressly or by implication the geothermal resources or right to mine geothermal resources, or both, shall be made to the Board ^{in accordance with} ~~as prescribed~~ under Rules 4.1 through ^{O.K. 4.8} ~~4.9~~, except as provided in Rule 5 herein.

5.2 Approval of Public Auction of Mining Lease.

a. If an application for a geothermal mining lease on reserved lands ^{has followed} Rules 4.1 to ^{4.8} ~~4.9~~ and the Board has determined that ^{for such application} the proposed geothermal mining use of the land would be of greater benefit to the State than the existing or reasonably foreseeable future use of the land sought to be leased, the Board ^{has the option of approving} ~~may approve~~ the granting of the mining lease ⁽¹⁾ by public auction ^{in accordance with} ~~as prescribed~~ in Rule ^{5.2(b)} ~~4~~ without public auction ^{in accordance with} ~~as prescribed~~ in Rule 5.3, or (2)

5.3 Approval of Mining Lease Without Public Auction.

The Board may, the by the vote of 2/3 of the voting members, may grant grant a geothermal mining lease on reserved land to the occupier thereof without public auction. Such a mining lease may be granted to a person other than the occupier if the occupier has signed his rights to apply for a lease to another person, in which case only such an assignee may be granted a geothermal mining lease. However, if the occupier or his assignee of the right to obtain a mining lease should fail to apply for a mining lease within six months from the date of notice from the Board of its finding that it is in the public interest ^{that the geothermal resources in} ~~that the minerals on~~ the reserved lands be mined, a mining lease shall be granted by public auction under Rule 4 and the bidders at the public auction shall bid on and an amount to be paid to the State for a mining lease granting to the lessee the right to develop the geothermal resources resources reserved to the State.

Rule 6 Surface Rights and Obligations

6.1 compensation to Occupiers.

a. The occupier ~~of~~ of State ~~lands~~ or ~~of~~ reserved lands on ~~which~~ ^{leased by} the Board (shall grant a geothermal mining lease,) shall be entitled to a reasonable rental ^{from the mining lessee} for the use of the surface ^{exploration and} for mining ~~or other incidental~~ operations, (including exploratory work,) ~~which rental shall be paid by the holder of the mining lease.~~

Damages

b. (If the Board grants a geothermal mining lease on State lands or on reserved lands, and ^{Also, if} the occupier ^{suffers} ~~thereof~~ ^{is} damaged ~~due to injury~~ to his crops, ^{his} (or) improvements, (or) ~~to~~ the surface (or) condition of his land, caused by ^{the} ~~any~~ ^{exploration and} mining (or other incidental) operations, ~~including exploratory work,~~ or by the failure of the ^{mining} lessee of ~~the mining lease~~ to properly restore the land after termination of operations, the occupier shall be reimbursed the full extent of the damages by the ^{mining} lessee; provided, that the occupier was not granted a mining lease without public auction as provided in ~~Rule 5, Chapter 182-5 HRS as amended.~~

Negotiation
^{Before entering upon the leased lands for exploration or mining operations}
b. The lessee of a [geothermal] mining lease, ^{must} ~~shall~~ (be required) [to] complete a satisfactory ^{written} agreement with any occupier(s) concerning rentals ^{and} ~~and for~~ damages to be paid to the occupier(s) ^{due to} ~~as a consequence of~~ any [geothermal] ^{exploration or} mining or other incidental operations, ~~including exploratory work;~~ and such agreement ^{must be approved by the Board.}

6.1 (cont'd)

c. However, any occupier of lands to be leased or leased by the Board shall leave until thirty (30) days after the public auction of such lands, the option to notify the Board in writing of his or their desire to determine by arbitration the amount of rentals and damages to be paid to the occupier by the successful bidder or mining lessee. Such arbitration shall be in accordance with Chapter 658 of the Hawaii Revised Statutes.

6.2 Mining Lessee's Rights.

a. Lessee shall be entitled to use and occupy only so much of the surface of leased lands as may be required for all purposes reasonably incident to exploration for, drilling for, production and marketing of geothermal resources and associated by-products produced from the leased lands, including the right to construct and maintain thereon all works, buildings, plants,

waterways, roads, communication lines, pipelines, reservoirs, tanks, pumping stations or other structures necessary to the full enjoyment and development thereof, consistent with a plan of operations and amendments thereto, as approved by the Director.

Chairman

6.3 General Conditions other than geothermal resources

a. A Geothermal Resources ^{mining} lease shall not be construed to prohibit the leasing of the leased lands by the Board to other persons for grazing and agricultural purposes, or for the mining of minerals ^{or for oil and gas development}; provided, however, that the lessee under a Geothermal Resources ^{mining} lease shall have paramount right as against grazing and agricultural lessees to the use of so much of the surface of the land as shall be necessary for the purposes of the ^{mining} lease. All lessees shall have the right of ingress and egress at all times during the term of the lease.

b. ^{under} Use of State lands within the jurisdiction and control of the Board are subject to the supervision of the ^{Chairman} Director. ^{use of} Other State lands are subject to the supervision of the appropriate State agency consistent with these rules.

under the control of other state agencies

6.3 (cont'd) /

mining

C. ~~D. 1.3~~ The Board reserves the right to sell or otherwise dispose of the surface of the lands embraced within a lease, insofar as said surface is not necessary for ~~the~~ use of the lessee in ^{his} the exploration, development and production of the geothermal resources and associated by-products, but any sale of surface rights made subsequent to execution of a ^{mining} lease shall be subject to all the terms and provisions of that lease during the life thereof, ~~including extensions and renewals under Rule 6.~~

D. ~~2~~ ^{Chairman} The Director shall be permitted at all reasonable times to go in and upon the leased lands and premises, during the term of a lease, to inspect the operations and the products obtained from ^{mining} the leased ^{lands} premises and to post any notice that the Director may deem fit and proper.

E. ~~3~~ During operations, the lessee shall regulate public access and vehicular traffic to protect human life, wildlife, livestock and property from hazards associated with the operations. For this purpose, the lessee shall provide warnings, fencing, flagmen, barricades, well and hole coverings and other safety measures as appropriate. Restrictions on access must be approved by the Director as part of ^{Chairman} the plan of operations ^{required} under Rule ~~13~~.

F. ~~4~~ ^{the mining} Lessee shall reclaim all State lands disturbed by exploration, development, operation and marketing of geothermal resources in accordance with ^{state terms and all state and local laws and regulations} applicable reclamation procedures ~~contained in Sections 47-1509 and 47-1510, Idaho Code, as now existing and hereafter amended.~~ Lessee shall conserve, segregate, stockpile and protect topsoil to enhance reclamation. Lessee shall take all necessary steps in the exploration, development, operation and marketing of geothermal resources to avoid a threat to life or property or an unreasonable risk to subsurface, surface or atmospheric resources.

Rule 7 - EXPLORATION AND MINING OPERATION

7.1 General Terms

The operator of a lease or permit shall conduct

a. All operations ^{in a manner that} will conform to the best practices and engineering principles in use in the industry. Operations shall be conducted in such a manner as to protect the natural resources on the leased lands, including without limitation, geothermal resources, and to result ^{in the maximum ultimate recovery of geothermal resources} with a minimum of waste, and be consistent with the principles of the use of the land for other purposes and ^{with minimal impact on} the environment. Operations shall be conducted with due regard for the safety and health of employees.

The operator shall promptly remove from the leased lands or store, in an orderly manner, all scraps or other materials not in use and shall notify the Director of all accidents within 24 hours and shall submit a written report within 30 days.

b. The operator of a lease or permit shall comply with and be subject in all respects to the conditions, limitations, penalties and provisions of the laws of the State of Idaho and ^{the rules and ordinances of city and counties applicable thereto} the rules of the Board, the Department of Water Resources, the Department of Health and Welfare, and all other federal, state and local laws, now existing or hereafter enacted.

c. The operator of a lease or permit shall take all reasonable precautions to prevent: ~~any~~ waste and damage to any natural resource including trees and other vegetation, fish and wildlife and their habitat; injury or damage to persons, real or personal property; and ^{any} environmental pollution or damage. The Director may inspect lessee's operations and issue such orders as are necessary to accomplish these purposes. [Any significant effect on the environment created by the lessee's operations or failure to comply]

d. The Director is authorized to shut down any operations which he determines are unsafe or are causing or can cause pollution of the natural environment or waste of natural resources including geothermal resources upon failure by lessee to take timely, corrective measures ordered by the Director.

e. When required by the Director, the lessee shall designate a local representative empowered to receive service of civil or criminal process, and notices and orders of the Director issued pursuant to these rules.

f. In all cases where ^{exploration or mining} operations are not conducted by the lessee but are to be conducted under authority of an approved operating agreement, assignment or other arrangement, a designation of operator shall be submitted to the Director prior to commencement of operations. Such a designation will be accepted as authority of the operator or his local representative to act for the lessee and to sign any papers or reports required under these rules. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the Director.

7.2

Plan of Operations Required

A lessee or permittee shall ^{not} commence operations of any kind

whether for exploration, development, or mining, or other related activities, prior to assessment, development, or mining.

~~1. Prior to initiation of operations to drill a well for any purpose to 1,000 feet or deeper, lessee shall submit to the Director for his approval a plan of operations. Such plan shall include:~~

1. ~~shall contain the location and elevation above sea level of derrick, proposed~~
- (a) ~~bottom hole location, casing program, proposed completion program and the size shape of drilling site, excavation and grading planned, and location of existing and proposed access roads. [Where the surface of the leased or permitted lands~~
2. ~~Existing and planned access, access controls and lateral roads;~~
3. ~~Location and source of water supply and road building material;~~
4. ~~Location of camp sites, air-strips and other supporting facilities;~~
5. ~~Other areas of potential surface disturbance;~~
6. ~~The topographic features of the land and the drainage patterns;~~
7. ~~Methods for disposing of waste material;~~
8. ~~A narrative statement describing the proposed measures to be taken for protection of the environment, including, but not limited to the prevention or control of (1) fires, (2) soil erosion, (3) pollution of the surface and ground water, (4) damage to fish and wildlife or other natural resources, (5) air and noise pollution, and (6) hazards to public health and safety during lease activities;~~
9. ~~All pertinent information or data which the Director may require to support the plan of operations for the utilization of geothermal resources and the protection of the environment;~~
- (j) ~~Provisions for monitoring deemed necessary by the Director to insure compliance with these rules for the operations under the plan;~~
- (k) ~~The information required for paragraphs (a) through (i) of this section may be shown on a map or maps of sufficient scale available from State or Federal sources.~~

7.3 Amendments to Plan of Operations

~~The plan of operations shall be amended by the lessee for the Director's approval to reflect changes in operations on the leased lands, including the installation of wells, buildings, pipelines, or structures for the production, marketing or utilization of geothermal resources.~~

prior

generating plants

drilling deeper, plugging back a well, redrilling, perforating of casing,

7.3 Drilling Operations

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^{or permittee}
d. ~~the~~ The lessee shall mark each derrick upon commencement of drilling operations and each ^{completed} ~~preparing or suspended~~ well in a conspicuous place with his name or the name of the operator, the ~~serial number of the~~ ^{number} lease, ~~the number and location of the~~ well. [Whenever possible, the well location shall be described by section or tract, township, range and by quarter-quarter section or lot.] The lessee shall take all necessary means and precautions to preserve these markings.

^{or permittee}
b. ~~the~~ The lessee shall: ^{and} take all necessary precautions to keep all wells under control at all times; ~~the~~ utilize trained and competent personnel; ~~the~~ utilize properly maintained equipment and materials; and ~~the~~ use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area. ^{diligently}

^{Chairman}
c. ~~the~~ When necessary or advisable, the Director shall require that adequate samples be taken and tests or surveys be made using techniques consistent with industry practice, without cost to the State of Idaho, to determine the identity and character of ^{geologic} ~~formations; the presence of geothermal resources, water or reservoir energy; the quantity and quality of geothermal resources; water or reservoir energy; the amount and direction of deviation of any well from the vertical; formation, casing and tubing pressures, temperatures, rate of heat and fluid flow; and whether or not operations are being conducted in a manner looking to the protection of the interests of the State of Idaho.~~

^{any}
by the operator d. ~~the~~ Before work is commenced to abandon any well, notice shall be given to the State Lands Division, which notice shall show the condition of the well and the proposed method of abandonment. No well may be abandoned ^{without} prior approval of the ~~method of abandonment has been obtained from the State Lands Division.~~

^{Chairman}
^{not} ~~the~~ Except as provided in Rule 16.E.1.7, ^{However, The operator of a lease or permit} ~~the lessee~~ shall promptly plug and abandon any well on the leased land that is not used or ^{deemed by the Board} ~~useful~~ in conformity with regulations promulgated by the Idaho Department of Water Resources or its predecessor agency. No production well shall be abandoned until its lack of capacity for further profitable production of geothermal resources has been demonstrated to the satisfaction of the Director. A producible well may be abandoned only after receipt of written approval by the ^{Chairman} ~~Director~~. Equipment shall be removed, and premises at the well site shall be restored as near as reasonably possible to its original condition immediately after plugging operations are completed on any well except as otherwise authorized by the Director. Drilling equipment shall not be removed from any suspended drilling well, ^{where drilling operations have been} ~~without taking~~ adequate measures to close the well and protect subsurface resources. Upon failure of lessee ^{or permittee} ~~to comply~~ with any requirements under this rule, the ^{Chairman} ~~Director~~ is authorized to cause the work to be performed at the expense of lessee ^{or permittee} and the surety.

7.4 Waste Prevention

^{mining}
A.A. All leases shall be subject to the condition that the lessee will, in conducting his ~~exploration~~^{exploratory} development and producing operations, use all reasonable precautions to prevent waste of geothermal resources and other natural resources found or developed in the leased lands.

^{geothermal} ^{on the leased lands}
B.B. The lessee shall, subject to the right to surrender the lease, diligently drill ~~and~~^{and} produce ~~such~~^{geothermal} wells as are necessary to protect the Board from loss by reason of production on other properties, or in lieu thereof, with the consent of the Director ^{Chairman} shall pay a sum determined by the Director as adequate to compensate the Board for failure to drill and produce any such wells. ^{on the leased lands}
The lessee shall promptly drill and produce such other wells as

^{Chairman}
the Director determines a reasonably prudent operator would drill in order that the lease be developed and produced in accordance with good operating practices.

^{Chairman}
C. The Director shall determine the value of production accruing to the Board where there is loss through waste or failure to drill and produce protection wells on the lease, and the compensation due to the Board as reimbursement for such loss. Payment for such losses will be paid when billed.

^{Chairman}
D. Subject to lessee's right to surrender the lease, where the Director determines that production, use or conversion of geothermal resources under a geothermal lease is susceptible of producing a valuable by-product or by-products, including commercially demineralized water contained in or derived from such geothermal resources for beneficial use in accordance with applicable State water laws, ^{the Chairman} he shall require substantial beneficial production or use thereof, except where he determines that:

- (1) Beneficial production or use is not in the interest of conservation of natural resources;
- (2) Beneficial production or use would not be economically feasible; or
- (3) Beneficial production and use should not be required for other reasons satisfactory to him.

7.5 Protection of Other Resources

a. ~~the~~ The lessee or permittee shall remove the derrick and other equipment and facilities within sixty (60) days after lessee or permittee has ceased making use thereof in its operations.

b. ~~the~~ All permanent operating sites where required shall be landscaped or fenced so as to screen them from public view as far as possible. Such landscaping or fencing shall be approved in advance by the state and kept in good condition.

c. ~~the~~ All drilling and production operations shall be conducted in such manner as to eliminate as far as practicable dust, noise, vibration, or noxious odors. Operating sites shall be kept neat, clean and safe. Drilling dust shall be controlled to prevent widespread deposition of dust. Detrimental material deposited on trees and vegetation shall be removed. The determination as to what is detrimental is a state responsibility.

d. ~~the~~ Wastes shall be discharged in accordance with ^{all Federal, State and local} requirements and Prohibitions prescribed by the Regional Water Quality Control Board. The State Lands Division and the state agency having jurisdiction over the affected lands shall also approve the place and manner of such waste disposal.

e. ~~the~~ Lessee or permittee shall communicate with the Department of Fish and Game prior to any operations which may adversely affect fish and wildlife resources.

f. ~~the~~ Any operations disturbing the soil surface, including road building, construction, and movement of heavy equipment in support of or relating to specific geothermal exploration or development activities shall be conducted in such manner as will not result in unreasonable damage to trees and plant cover, soil erosion, or ~~the~~ degradation of ^{water resources} of the State, including fish and aquatic life habitat.

g. ~~the~~ Existing roads and bridges on or serving the area under lease or permit shall be maintained in a condition equal to or better than that before use. New roads and bridges shall be located, constructed, and maintained in accordance with state specifications.

h. ~~the~~ Timber damaged, destroyed, or used on the area under lease or permit shall be compensated for at market value to the state. Borrow pit material shall not be obtained from state lands without permission and payment of market value.

i. ~~the~~ Improvements, structures, telephone lines, trails, ditches, pipelines, water developments, fences and other property of the state or other lessees or permittees, and permanent improvements and crops of surface owners, shall be protected from damage and repaired or replaced when damaged.

j. ~~the~~ Access to drilling or production sites by the public shall be controlled by the lessee or permittee to prevent accidents or injury to persons or property.

k. ~~the~~ Drilling mud shall be ponded in a safe manner and place, and where required by the state, posted with danger signs, and fenced to protect persons, domestic animals, and wildlife. Upon completion of drilling, the mud shall be disposed of, or after drying in place, covered with a protective layer of soil.

l. ~~the~~ Areas cleared and graded for drilling and production facility sites shall be kept to a reasonable number and size, and be subject to state approval.

m. ~~the~~ Lessee or permittee shall conduct its operations in a manner which will not interfere with the right of the public to fish upon and from the public lands of the state and in the waters thereof or will not preclude the right of the public to use of public lands and waters.

7.6 Suspension of Operations

2264. SUSPENSION OF OPERATIONS.

In the event of any disaster or of pollution caused in any manner or resulting from operations under a lease or permit, lessee or permittee shall suspend any drilling and production operations, except those which are corrective, or mitigative, and immediately and promptly notify the ~~State Lands Division~~ ^{Chairman}. Such drilling and production operations shall not be resumed until adequate corrective measures have been taken and authorization for resumption of operations has been made by the ~~State Lands Division~~ ^{Chairman}. The lessee or permittee shall suspend any drilling and production operations, except those which are corrective or mitigative, if the ~~State Lands Commission~~ ^{Board} shall determine that there is a substantial likelihood that continued operations would endanger public health or safety or cause serious damage to property or the natural environment. Such operations shall not be resumed until the ~~Commission~~ ^{Board} shall determine that adequate corrective measures are feasible and have been taken to eliminate such substantial likelihood.

7.7 Diligent Operations Required

The ~~lessee or permittee~~ ^{Chairman} shall be

Each lease ^{in development or development} will include provisions for the diligent ^{on the lands permitted or leased} exploration of the ~~leased~~ ^{geothermal} resources until there is production in commercial quantities ^{from the State lands subject to lease}. Failure to perform ^{diligent operations} ~~such exploration~~ may subject the lease ^{to termination} ~~to termination~~. Diligent ^{operations} ~~exploration~~ means ^{any development} ~~exploration~~ operations on or related to the leased lands, including without limitation geochemical surveys, heat flow measurements, core drilling or drilling of a test well. A report of all exploration operations and expenditures must be submitted to the Director at the close of each ^{year} ~~year~~. Beginning with the sixth year of the primary lease term, and each year thereafter, exploration ^{operations} ~~operations~~, to qualify as diligent ^{development} ~~operations~~, must entail expenses during that year equal to at least ^{four} ~~four~~ times the lease rental for the same year. ^{any development} ~~Exploration~~ expenses incurred during any year of the primary lease term in excess of those required herein may be credited toward diligent exploration during subsequent years of the primary lease term. ^{or permitted}

7.8 Records and Reports

The Chairman or his representative

a. Lessee ^{or permittee} shall permit ^{Director} ~~Director~~ to examine during reasonable business hours all books, records and other documents and matters pertaining to operations under a lease ^{or permit} in his custody or control, and to make copies of and extracts therefrom at the Board's expense.

b. Lessee or permittee shall furnish to the ^{Department} ~~State Lands Division~~ for its confidential use the following in the manner and form prescribed:

- (1) Statements showing the work performed upon the leased or permitted area and the amount, quality, and value of all geothermal resources produced, shipped or sold;
- (2) Copies of all physical and factual exploration results, logs and surveys which may be conducted, well test data, and other data resulting from operations under the lease or permit.

10
7.9
SURRENDER OF PREMISES.

At the expiration of the lease or permit, ~~or sooner termination thereof~~
lessee or permittee shall restore the lands covered by said lease or permit to
their original condition insofar as it is reasonable to do so, except for such
roads, excavations, alterations or other improvements which may be designated for
retention by the ~~State Lands Division~~ or any state agency having jurisdiction over
the affected lands. Where determined necessary by the ~~Division and~~ such state
agency, cleared sites and roadways shall be replanted with grass, shrubs or trees.

Rule 8 - AMENDMENTS

These rules may be amended, altered, changed, modified or repealed at any time by action of the Board, ~~after notice and opportunity for written or oral comment~~; provided, however, any amendment to these rules changing the rental or royalty due the State of ~~Idaho~~ ^{Hawaii} or the term of geothermal resource leases shall not adversely affect leases outstanding upon the effective date of the amendment.

~~RULE 11 - CONFLICTS OF INTEREST~~

1. Where conflicts of interests for lands that have full power to hold, including evidence concerning, or through a relationship, the conflict of interest shall be resolved.

in accordance with Chapter 91 of the Hawaiian Revised Statutes;

12.3 Cementing Requirements.

ing? a. If useable (as determined by the Chairman) basal ground water resources exist, a minimum of 100 lineal feet of cement shall be placed straddling

the interface or transition zone between fresh water and salt water in open hole or behind casing, as the case may be. *the overlying and underlying*

b. One hundred (100) lineal feet of cement shall be placed straddling the bottom of the conductor pipe and the shoe of all casing.

c. One hundred (100) lineal feet of cement shall be placed *solidly across* ~~straddling~~ below and above geothermal zones, whether uncased or cased with (perforated) hole *and extending with 3 ft or 1*

d. Fifty (50) lineal feet of cement shall be placed above the top of casing liners.

e. One Hundred (100) lineal feet of cement shall be placed straddling casing stubs and laps. If unable to enter casing stubs or laps, 100 lineal feet of cement shall be placed above the top of the stubs or laps.

f. If casing is collapsed, etc., cement shall be placed *solidly* in the geothermal [production] zone or perforated section of casing and extending 100 lineal feet above such zone or perforated section by squeezing with a retainer or braden head.

g. *A surface grout consisting of neat* minimum of 50 lineal feet of cement shall be placed below the surface of the well, ~~using neat cement or ready mix concrete.~~

12.4 Deserted Wells.

The Chairman may order the abandonment of any well that has been deserted whether or not any damage is occurring or is threatened. Removal of drilling rig is prima facie evidence of desertion after the elapse of six months unless a request for an extension of time for not more than an additional six months is filed with the Chairman. For good cause shown, the Chairman may extend such additional period.

RULE NO. 13
WELL RECORDS & REPORTS

13.1 General.

The owner or operator of any well shall keep, or cause to be kept, a careful and accurate log, core record, and history of the drilling of the well. The log shall be kept in the local office of the owner or operator and together with ^{all other} reports of the owner or operator, shall be subject, during business hours, to the inspection of the Chairman or his designated representative.

13.2 Records to be Filed.

Within 60 days after the completion of any well, the owner or operator shall file with the Chairman the following well records:

a. Drilling Log and Core Record. The drilling log shall show the lithologic characteristics and depths of formations encountered, the depths and temperatures of ^{ground} water-bearing and ^{geothermal resources} steam-bearing strata, the temperatures, chemical compositions, and other chemical and physical characteristics of fluids encountered from time to time, so far as ascertained. The core record shall show the depth, lithologic character and fluid content of cores obtained, so far as determined.

b. Well History. ^{well} The history shall describe in detail the chronological order on a daily basis all significant operations carried out and equipment used during all phases of drilling, testing, completion, recompletion and abandonment of the well.

c. Well Summary. ^{shall} The well summary report is designed to show data pertinent to the condition of ^{the} a well at the time of completion of work done. Well locations shown on this form shall be surveyed by a licensed surveyor.

d. Electric Logs, Directional Surveys, Physical or Chemical Logs, Salinity Logs, ^{tests} water analyses, and Temperature Surveys, if performed.

13.3 Annual Reports to be Filed.

The owner or operator of any well which is producing geothermal resources or by-products or being used for injection purposes shall file with the Chairman on or before the 30th day after the end of each calendar year, an annual report on the amount of geothermal resources produced or the amount of fluid injected for each month of the calendar year ended.

~~13.5 Confidentiality of Records~~

~~Exce~~

13.4 Confidentiality of Records

Except for wells on State and reserved lands ~~and as~~ provided elsewhere in these regulations, ~~the well~~ records and reports required to be filed shall be held confidential by the Department except for the following information: (1) well owner or operator's name, (2) well number, (3) elevation of well, and (4) location of well.

Such well
 [The records and reports of privately owned wells] required to be filed with the Chairman shall be open to inspection only to the Board, the Chairman, and designated State officials; and to ~~those~~ persons authorized in writing by the owner or operator.

only other who are
 The records and reports for a completed or producing well that has been transferred by sale, lease, or otherwise shall be made available to the new owner or lessee, for inspection or copying and shall be made available for inspection or copying by others authorized in writing by such new owner or lessee.

13.5 Records and Reports as Evidence.

and reports required to be filed
 Records shall in no case be available as evidence in court proceedings. No officer or employee or member of the Board shall be allowed to give testimony as to the contents of such records except as necessary for the review of a decision of the Chairman or the Board, or in any proceeding initiated for the enforcement of an order of the administrator, or in criminal proceedings arising out of such records or the statements upon which they are based.

RULE NO. 14
ENVIRONMENTAL PROTECTION

14.1 General.

a. Protection of the environment includes responsibility of the owner or operator of any well to: conduct exploration and development operations in a manner that provides maximum protection of the environment; rehabilitate disturbed lands; take all necessary precautions to protect the public health and safety; and conduct operations in accordance with the spirit and objectives of all applicable environmental legislation.

b.

b. Adverse environmental impact

impacts from geothermal-related activity shall be prevented or mitigated through enforcement of applicable Federal, State, and local standards, and the application of existing technology. Inability to meet these environmental standards or continued violation of environmental standards by any well owner or operator after due notification, may be construed as grounds for the Chairman to order a suspension of well operations.

c. The owner or operator of a well shall be responsible for monitoring of readily identifiable localized environmental impacts associated with specific activities that are under his control. Monitoring of environmental impacts may be conducted by the use of aerial surveys, inspections, periodic samplings, continuous records, or by such other means or methods as required by the Chairman. Due to the differing natural environmental conditions among geothermal areas, the extent and frequency of such monitoring activities will be approved by the Chairman on an individual well basis. In the event the Chairman determines that the degree and adequacy of existing environmental protection regulations in certain areas are insufficient, the Chairman may establish additional and more stringent requirements.

The owner or operator of a well shall provide for acquisition of environmental baseline data for a period of one year prior to submission of a plan for production. Techniques and standards to be used by the owner or operator for meeting these requirements shall be subject to the approval of the Chairman.

d. Aesthetics. The owner or operator of a well shall reduce visual impact, where feasible, by the careful selection of sites for operations and facilities. The design and construction of facilities shall be conducted in a manner such that the facilities will blend into the natural environmental setting of the area by the appropriate use of landscaping, vegetation, compatible color schemes, and minimum profiles. Native plants or other compatible vegetation shall be used, where possible, for landscaping and revegetation.

e. Land Use and Reclamation. Drilling and operating plans shall be designed so that such operations will result in the least disturbance of land, water, and vegetation. Existing roads shall be used where feasible. Entry upon certain environmentally fragile land areas may be either seasonally restricted or restricted to special vehicles or transportation methods which will minimize disturbance to the surface or other resources as specified by the Chairman.

5.

The owner or operator of a well shall ^{design} plan and conduct all ^{well} drilling, casing and cementing operations in such a manner as provide for ~~adequate~~ protection of ^{all} ~~the~~ ^{useful} ground water resources from exhaustion, depletion, waste, pollution, salt water encroachment or the threat thereof.

Plans for
 Drilling operating ^{ions} ~~plans~~ shall provide for the reclamation and revegetation of all disturbed lands in a manner approved by the Chairman. Land reclamation may include preparation and seeding with prescribed wildlife food and plant cover or improved and acceptable substitutes thereof which ~~will~~ will equal or enhance the food values for indigenous wildlife species and domesticated animals. Temporary fencing for such reclaimed areas may be required to facilitate restoration thereof.

f. Slope Stability and Erosion Control. Operations shall be conducted in such a manner so as to minimize erosion and disturbance to natural drainage. The owner or operator of a well shall provide adequate erosion and drainage control to prevent sediments from disturbed sites from entering water courses for soil and natural resource conservation protection.

g. Biota. The owner or operator of a well shall conduct all operations in such a manner as to afford reasonable protection of fish, wildlife, and natural habitat. He shall take such measures as are necessary for the conservation of endangered and threatened species of flora and fauna as set forth by applicable legislation.

g. Cultural Resources Preservation. The owner or operator of a well shall exercise due diligence in the conduct of his operations to protect and preserve significant archaeological, historical, cultural, paleontological, and unique geologic sites.

Previously unknown sites discovered during any operations shall be immediately reported to the Chairman, and operations on that site shall cease until said site can be assessed for its archaeological value.

owner or operator of a well
 i. Pollution; Waste Disposal. The ~~(lessee)~~ shall comply with all applicable Federal, State, and local standards with respect to air, land, water, and noise pollution, and the disposal of liquid, solid, and gaseous wastes. Immediate corrective action shall be taken in all cases where pollution has occurred.

j. Groundwater

PART III - OTHER PROVISIONS

RULE NO. 15
APPEAL

As provided in Chapter 178, [Section 10] of the Hawaii Revised Statutes, any person² as defined in these regulations any person as defined in these regulations adversely affected thereby may appeal to the circuit court from any ruling of the Board regulating the flow, manner of sealing, or manner of repairing of any well by filing, in writing, a notice of appeal within ten days after the date of the ruling with the clerk of the court and serving a copy thereof upon the Board stating the grounds therefor. The court shall have power to review and to affirm, modify, or reverse any decision or order of the Board so appealed from, in many m any matter of law or fact.

RULE NO. 16
PENALTIES

As provided in Chapter 178 of the Hawaii Revised Statutes, any person violating these regulations shall be fined not more than \$100; and where continuance of waste, as defined in Chapter 178, is under immediate control, each day's continuance of the same, after written notice shall constitute a separate offense; provided, that when the continuance of the waste is not under immediate control, as where recasing or sealing is necessary, each day's continuance of the same shall constitute a separate offense after sixty days have elapsed from the time of receiving written notice to prevent waste. For violations under sections 178-5 and 178-6 of Chapter 178, HRS, each day's continuance of the same shall constitute a separate offense after 30 days have elapsed from the time of written notice of violations.

RULE NO. 17
INJUNCTIONS

As provided in Chapter 177 of the Hawaii Revised Statutes, if it appears to the Board of

Board that any person has engaged or is about to engage in any act or practice constituting a violation of that chapter or any rule, regulation, or order of the Board, the Board may bring an action in the appropriate circuit court to enjoin any such acts or practices and to enforce compliance with this chapter or any rule, regulation, or order. Upon a proper showing, the court shall grant a restraining order, temporary or permanent injunction, or other appropriate relief. The Board shall not be required to post a bond.

appropriate

RULE NO. 18
AMENDMENTS

These rules may be amended or repealed at any time by action of the Board, in accordance with Chapter 91 of the Hawaii Revised Statutes; provided, however, that any amendment to these rules changing the rental or royalty due the State of Hawaii or the term of leases shall not adversely affect leases outstanding upon the effective date of the amendment.

The Board of Land and Natural Resources on _____, 19____,
approved and adopted these rules and regulations.

STATE OF HAWAII

By _____
Chairman and Member
BOARD OF
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

APPROVED THIS
Approved this _____ day
of _____, 19____

Governor of Hawaii

Approved as to form
Approved as to form:

Deputy Attorney General

Dated: _____

PUBLICATION OF
NOTICE OF PUBLIC HEARING

O/R
12

PART II - DRILLING FOR GEOTHERMAL RESOURCES

RULE NO. 8
GENERAL8.1 Purpose.

All wells drilled in the State of Hawaii for the discovery evaluation, development, production, utilization and injection of geothermal resources or by-productions shall be subject to Part II of these regulations and shall be drilled, operated, and maintained or abandoned in such a manner as to prevent or minimize damage or the threat of damage to life, health, property, environment, ground water resources, and geothermal resources.

8.2 Definitions.

In addition to Rule 1.6, Definitions, of these regulations, the term:

8.2 ✓
~~8.3~~Designation of Agent.

Every owner or operator of any well shall designate an agent, who resides in the State of Hawaii, giving his post office address, upon whom may be served all orders, notices, and processes of the Department or any court of law. Every person so appointing an agent shall, within five days after the termination of any such agency, notify the Chairman in writing of such termination, and unless operations are discontinued, shall appoint a new agent. All changes in the address of an agent must be recorded with the Chairman within five days of the change of the address.

RULE 9
DRILLING OF GEOTHERMAL WELLS

9.1 Notice of Intent to Drill; Permit

a person, as defined in these regulations,
 Before ~~an~~ owner or operator can commence the drilling of a new well; the deepening, redrilling, plugging or altering of casing of an existing well; or the redrilling of an abandoned well, he must file with the Chairman written notice

to Deepen, Redrill, Plug or Alter Casing, as the case may be,
 Notice of Intent to Drill accompanied by the appropriate fee and bond (see Rules 9.3 and 9.4). Drilling ~~shall~~ *operations* not commence until a permit ~~is~~ *has been* issued by the Chairman. If operations have not commenced within one year of the receipt of the notice, the notice will be canceled. The Notice of Intent ~~to Drill~~ shall contain the following:

a. The exact location of the well and the elevation of the floor or kelly bushing of the proposed derrick. A resurvey by a licensed surveyor may be required if there is a dispute with the neighboring landowner over the location of a well or if the ~~division finds~~

Department finds unreconcilable differences in the survey data submitted.

b. The number or other ~~designated~~ designation by which the well shall be known. Such number or designation shall be subject to the approval of the supervisor.

c. The operator's proposed casing program.

the purpose of the well and
 d. ~~The~~ *not injection* owner's or operator's estimate of the depths between which production will be attempted.

Notices of Intent to Drill must also be filed with the Chairman for temperature test holes and drilling shall not commence until a permit ~~is~~ issued by the Chairman.

9.2 Supplementary Notice of Intent to Drill.

A supplementary notice must be filed if there is any change in the original Notice of Intent to Drill

operations
 Notices of Intent to Drill for shallow temperature test holes *of less than a depth of 500 feet* must also be filed with the Chairman and drilling shall not commence until a permit ~~is~~ *has been* issued by the Chairman.

9.2 Supplementary Notice of Intent to Drill.

A supplementary notice must be filed if there is any change in the original Notice of Intent ~~to Drill~~ and written approval must be received from the Chairman before the work is started.

9.3 Filing Fees.

Each Notice of Intent ~~to Drill~~ for shallow temperature test holes shall be accompanied by a ~~non-refundable~~ nonrefundable filing fee in the amount of \$25. *for a well* Each Notice of Intent ~~to Drill~~ shall be accompanied by a nonrefundable filing fee in the amount of \$100.

9.4 Bonds.

a. All wells require a bond. Each person who engages in the drilling, redrilling, deepening, maintaining or abandoning of any well shall file with the su

Chairman an indemnity bond in the sum of five thousand dollars (\$5,000) for each well or twenty-five thousand dollars (\$25,000) for any number of wells. The bonds shall be executed by such person, as principal, and by an authorized surety company, as surety, conditioned that the principal named in the bonds shall faithfully comply with these regulations. The bonds shall secure the State against all losses, charges, and expenses incurred to it by the principal named in the bond.

b. Bonds shall remain in force for the life of the well or ~~all~~ wells and may not be released until the well or wells are properly abandoned or another valid bond is substituted therefor. Any person who acquires the ownership or operation of any well or wells shall within five days after acquisition file with the ~~Chairman~~ an indemnity bond in the sum of ~~\$5,000~~ \$5,000 for each well acquired or a \$25,000 blanket bond for any number of wells acquired.

9.5 Well Spacing.

a. Any well drilled for the discovery and/or production of geothermal resources or for injection of geothermal resources shall be located more than 100 feet from and within the outer boundary of the parcel of land on which the well is situated, or more than 100 feet from a public road, street, or highway dedicated prior to the commencement of drilling. Where several contiguous parcels of land under one or more ownerships are operated as a single geothermal resources operating unit, the term "outer boundary line" means the outer boundary line of the lands included in such a unit.

b. ~~E~~

The Chairman shall approve ~~the~~ proposed well spacing programs or prescribe such modifications to the programs as it deems necessary for proper development giving consideration to such factors as, but not limited to, topographic characteristics of the area, hydrologic, geologic, and ~~re~~ reservoir characteristics of the area, the number of wells that can be economically drilled to provide the necessary volume of geothermal resources for the intended use, minimizing well interference, unreasonable interference with multiple use of lands, and protection of the environment.

and conservation of geothermal resources,

(other than ^a vertical direction)

9.6 Directional Drilling.

Where the surface of a parcel of land containing one acre or more is unavailable for drilling, a directionally drilled well may be located upon another parcel which may or may not be contiguous. The location of such a well shall be not less than 25 feet from the outer boundary of the parcel on which it is located and not less than 25 feet from an existing street or road. The production or injection interval of such a well shall be not less than 100 feet from the outer boundary of the parcel into which ~~it~~

it is drilled.

The directional well surveys shall be filed with the Department for all wells directionally drilled.

9.7 Casing Requirements.

a. General. All wells shall be cased in such a manner as to prevent or minimize damage to the environment, ground water resources, geothermal resources, life, health and property. The permanent well head completion equipment shall be attached to the production casing or to the intermediate casing if production casing does not extend from the reach to the surface. Department specifications for casing strings shall be determined on a well-to-well basis. All casing strings reaching the surface shall provide adequate anchorage for blowout-prevention equipment, hole pressure control and protection for all natural resources. The casing requirements described below are general and should be used as guidelines in submitting proposed casing programs, required to be filed with Notices of Intent to Drill.

b. Conductor Pipe. Conductor pipe shall be installed to a depth of a minimum of 50 feet and a maximum of 150 feet. In special cases the Chairman may allow conductor pipe to be run and cemented at deeper depths. The annular space ^{between the hole and pipe} shall be cemented solid to the surface. Blowout-prevention equipment (BPOE) approved by the Chairman shall be installed on the conductor pipe on all exploratory wells and on development wells, when deemed necessary by the Chairman.

c. Surface Casing.

Surface casing shall be installed to provide for control of formation fluids, for protection of ground water resources and for anchorage of blowout-prevention equipment. All surface casing shall be cemented solid to the surface.

c. Surface Casing. Surface casing shall be installed to provide for control of formation fluids, for protection of ground water resources and for anchorage of blowout-prevention equipment. All surface casing shall be cemented solid to the surface.

Surface casing shall be set to a depth ^{minimum} ~~equal to~~ ^{of ten percent of} two times the known or theoretical depth of the brackish water transition zone underlying any known or suspected potable basal ground water body. ^{proposed} The total depth of the casing shall be determined as forty (40) times the known or estimated as the case may be, elevation in feet above mean sea level of the potable basal water level in the area being drilled. ^{or 500 feet whichever is greater,} If ~~non-potable~~ ^{potable} basal ground water is present in the area, the depth of the surface casing shall be approved by the Chairman, ^{or reasonably suspected to exist} but in no case shall the surface casing be set to a depth less than 200 feet below the ground surface. If subsurface geological, hydrological, or geothermal conditions are known in or in the vicinity of the area to be drilled, such conditions shall be used in determining and approving the depth of surface casing. A second string of surface casing may be required if the first string has not been cemented through a sufficient series of low permeability, competent rock formations and either a rapidly increasing thermal gradient or rapidly increasing formation pressures are encountered.

d. Intermediate Casing. Intermediate casing shall be required for protection against anomalous pressure zones, cave-ins, washouts, abnormal temperature zones, uncontrollable lost circulation zones or other drilling hazards. Intermediate casing strings shall be cemented solid to the surface.

e. Production Casing. Production casing may be set above or through the producing or injection zone and cemented above ~~the~~ such zones. Sufficient cement shall be used to exclude overlying formation fluids from the zone, to segregate zones and to prevent movement of fluids behind the casing into zones that contain ground water. Production casing shall either be cemented solid to the surface or lapped into intermediate casing, ^{if installed} if ~~can~~. If the production casing is lapped into an intermediate string, the casing overlap shall be at least 50 feet, the lap shall be cemented solid and the lap shall be pressure tested to ensure the integrity of the lap.

In order to reduce casing corrosion, production casing used to produce corrosive brine reservoirs shall be of the same nominal inside diameter from the shoe of the casing to the ground surface.

9.8 Mud Return Temperature Logging.

The temperature of the return drilling mud shall be ~~monitored~~ continuously during drilling of the surface casing portion of the drill hole. Either a continuous temperature monitoring device shall be installed and maintained in working condition, or the temperature shall be read manually. In either case, return mud temperatures shall be entered into the log book after each joint of pipe has been drilled down (about every 30 feet).

9.9 Electric Well Logging.

All wellss except observation wells, shall be logged with an induction electrical log, or other approved log from total depth to the bottom of the conductor pipe before installing casing, except in the case where air is used as the drilling medium. This requirement may vary from area to area, depending upon the amount of subsurface geological or hydrological data is available, and may not be required under certain conditions, subject to the approval of the Chairman.

9.10 Blowout-Prevention Equipment.

a. General. Blowout-prevention equipment (BPOE) capable of shutting-in the well during any operation shall be installed on the surface casing and maintained ~~for~~

ready for use at all times. BOPE pressure tests shall be witnessed by the Chairman or his designated representative on all exploratory wells prior to drilling out the shoe of the surface casing. The decision to require and witness BOPE pressure tests on other types of wells shall be made on a well-to-well basis. In any case, the Chairman must be contacted well in advance of a scheduled pressure test to allow time for travel to the well site to witness the test.

BOPE installations shall include high temperature-rated packing units and ram rubbers if available and shall have a minimum working-pressure rating equal to or greater than the lesser of: (1)

a pressure equal to the product of the depth of the BOPE anchor string in feet times one (1) psi per foot; (2) a pressure equal to the rated burst pressure of the BOPE anchor string; or (3) a pressure equal to 2000 psi.

b. BPOE Classes. The requirements for blowout-prevention equipment shall be guided by the following:

(1) ~~NO~~ BOPE: Required for known shallow, low temperature, low pressure areas where down-hole water temperatures are less than 100 degree Celsius at depths less than 500 feet or where temperature and pressures are ~~unknown at the pipe~~

~~proposed depth of drilling~~
unknown and the proposed depth of drilling is less than 500 feet.

(2) CLASS 2M BOPE (API CLASS 2M-A or 2M-RE): Required for low pressure ~~area where~~
areas where known temperatures are above 100 degree Celsius at depths less than 2,000 feet, or where subsurface temperatures and pressures are unknown and the proposed depth of drilling is less than 2,000 feet. Equipment shall include: an annular BOPE or pipe-ram/blind-ram

BOPE with minimum working-pressure ratings of 1,000 psi installed on the surface casing so that the well can be shut-in at any time; hydraulic and/or manual actuating system; kelly cock; a fill-up line installed above the BOPE; a kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and a flow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner so as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(3) CLASS 3M BOPE (API CLASS 2M-RSRA or EQUIVALENT): Required for medium pressure areas where subsurface pressures are less than 1000 psi or where pressures are unknown and the proposed total depth of the well is greater than 2000 feet. Equipment shall include: annular BOPE and pipe-ram/blind-ram BOPE with a minimum working-pressure rating of 2,000 psi installed on the surface casing so that the well can be shut-in at any time and with a double-ram preventer having a mechanical locking device; a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high pressure auxiliary backup system equipped with dual controls, one at the driller's station and one at least 50 feet away from the well head; kelly cock and standpipe valve; a fill-up line installed above the BOPE; a kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and a flow-down line fitted with two valves installed below the BOPE with blow-down line directed in such a manner as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(4) CLASS 1A BOPE: Required in areas where dry steam is known to exist and/or formation pressures are less than hydrostatic and air is used as the drilling medium. Equipment shall include: a rotating-head installed at the top of the BOPE stack; a pipe-ram/blind-ram BOPE, with a minimum working-pressure rating of 1,000 psi, installed below the rotating-head so that the well can be shut-in at any time; a banjo-box steam diversion unit installed below the double-ram BOPE, fitted and a muffler capable of lowering sound emissions to within acceptable standards; a blind-ram BOPE, with a minimum working-pressure rating of 1,000 psi, installed below the banjo-box so that the well can be shut-in while removing the rotating-head during bit changes; a gate valve, with a minimum working-pressure rating of 300 psi, installed below the blind-ram so that the well can be shut-in after the well has been completed, prior to removal of the BOPE stack; all ram-type BOPE shall have a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high-pressure backup system; dual control stations for hydraulic backup system, one at the driller's station and the other at least 50 feet away from the well head; kelly cock and standpipe valves; a kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and a flow-down line fitted with two valves installed below the BOPE. This line shall be directed so as to minimize any safety hazard to personnel. If any portion of a well is drilled using mud, Class 2M BOPE shall be installed on the surface casing so that the well can be shut-in at any time.

9.11 Well Completion.

A well is considered to be completed 30 days after drilling operations have ceased and the well is capable of producing a ~~geothermal res~~ geothermal resource, or 30 days after it has commenced to produce a geothermal resource, unless drilling operations are resumed before the end of the 30-day period. For the purpose of filing ^{well} ~~drilling~~ records, the time limit of 60 days begins either when the well commences production or injection, the drilling operations are suspended for more than 30 days, or the well is abandoned.

9.12 Well Tests.

The Chairman shall require such well tests or remedial work as in his judgment are necessary to prevent and minimize damage to life, health, property, ~~and natural resources, geothermal resources, ground~~

property, natural resources, ~~geothermal~~ geothermal resources, ground water resources, and the environment. Types of tests shall include casing tests, cementing tests, and equipment tests, ^{similar or equivalent to tests performed on oil and gas wells.}

RULE 10

WELL MODIFICATION FOR INJECTION

10.1 Injection Wells

Injection wells are those wells used for disposal of geothermal waste fluids, for the augmentation of geothermal reservoir fluids, for maintenance of reservoir pressures, or for any other purpose authorized by the Chairman. New wells may be drilled or old wells may be modified for such injection purposes.

10.2 Notice of Intent Required.

Prior to modification of existing wells for injection purposes, a Notice of Intent to Deepen, Redrill, Plug or Alter Casing must be filed with the Chairman together with filing fees and bonds, as ~~required~~ required in Rule 9.1. Modification work shall not commence until a permit has been issued by the Chairman.

10.3 Notice of Intent Required

10.2 Notice of Intent Required.

Prior

10.3 Surveillance of Injection Wells.

Surveillance of injection wells ^{shall be} is necessary on a continuing basis in order to establish that all injection effluent is confined to the intended zone of injection. When an owner or operator proposes to drill a new well or modify an existing well he shall be required to demonstrate to the Chairman or his designated ~~requir~~

representative that the casing has complete integrity by approved test methods.

To establish the integrity of the ~~annual~~ annular cement above the shoe of the casing, the owner or operator shall make sufficient surveys, within 30 days after injection is started into a well, to demonstrate that all the injected fluid is confined to the intended zone of injection. Thereafter, such surveys shall be made at least every two years, or more often if ordered by the Chairman. All such surveys shall be witnessed by the Chairman or his designated representative.

After the injection well has been put into service, the Chairman or his designated representative shall visit the ~~well site~~

well site periodically. At these times, surface conditions shall be noted and if any unsatisfactory conditions exist, the owner or operator shall be notified of needed remedial work. ^{for such well} If this required work is not performed within 90 days, the permit issued by the Chairman shall be rescinded. If it is determined that damage is occurring at a rapid rate, the Chairman may order that the repair work be done immediately.

Injection pressures shall be recorded and compared with the pressure reported on the appropriate forms. Any discrepancies shall be rectified immediately by the operator. A graph of pressures and rates versus time shall be maintained by the operator. Reasons for anomalies shall be promptly ascertained. If these reasons are such that it appears damage is being done, the permit issued by the Chairman may be rescinded, and injection shall cease.

At the discretion of the Chairman, when an injection well has been left idle for a significant ~~time~~

length of time, the owner or operator shall be informed by letter that the permit issued for use of the well for injection purposes has been rescinded. In the event the operator intends ^(to again) use the well for injection purposes, he shall be required to file an appropriate Notice of Intent, ~~Intent~~, proposing to demonstrate by means of surveys that the injected fluids will be confined to the intended zone of injection.

RULE 11
WELL MAINTENANCE

11 Maintenance

All producing wells and appurtenances such as well head, separators, pumps, mufflers, manifolds, valves and pipelines shall be maintained in good *working* condition in order to prevent loss of or damage to life, health, property, natural resources, and environment. Periodic corrosion surveillance may be conducted by the Chairman or his designated representative.

RULE 12
WELL ABANDONMENT

12.1 Notice of Intent Required.

The owner or operator of a well to be abandoned must file with the Chairman *proposed* a Notice of Intent to *Abandon* ~~Drill~~, prior to any such work on the well. The operator's proposed plans for abandonment shall be subject to approval prior to the issuance of a permit to ~~abandon~~ *abandon* by the Chairman.

12.2 General Requirements.

a. The owner or operator shall promptly plug and abandon any well that is not in use or demonstrated to be potentially useful. No well shall be abandoned until its lack of capacity for further profitable ~~production~~ *production of* geothermal resources has been demonstrated to the satisfaction of the Chairman. No well shall be plugged and abandoned until the manner and method of plugging have been approved or prescribed by the Chairman.

b. Prior to commencing abandonment operations, the Chairman shall be notified of all such operations.

c. Cement used to plug any well, except that cement or concrete used for surface plugging, shall be placed in the hole by pumping through drill pipe or tubing. Such cement shall *contain* ~~consist~~ of a high temperature resistant admix, unless this requirement is waived by the Chairman in accordance with the particular circumstances existing in that well or area.

d. Good ~~quality~~ *quality*, heavy drilling fluid approved by the supervisor shall be used to replace any water in the ~~hole~~ *hole* and to fill all portions of the hole not plugged with cement.

e. All open annuli shall be filled solid with cement to the surface.

f. Subsequent to plugging and abandonment operations in the hole, casings shall be cut off at least 6 feet below the surface of the ground, all concrete cells

cellars and other structures shall be removed, and the surface location restored, as near as practicable, to original conditions.

g. A History of Geothermal Resources Well shall be filed within 60 days after completion of abandonment; except in the case of a prospect well such report shall be filed within six months after abandonment.

h. Any bond or rider thereto covering the well shall remain in full force and effect until the well is properly abandoned and the surface properly restored. Written approval of the abandonment must be obtained from the Chairman before release of any bonds will be recommended.

SUGGESTED REVISIONS

to

October 3, 1978, Draft of Proposed Ground Water Use Regulations

On October 26, 1978, staff received further comments on the October 3, 1978 draft of the proposed Ground Water Use Regulations and the following revisions are suggested for the Board's consideration:

1.1 Authority.

These regulations are promulgated under Chapters 177 "Ground Water Use" and 178 "Wells Generally" of the Hawaii Revised Statutes.

1.6 Principles of Ground Water Use Regulation.

The ground water of designated ground water control areas of the State is subject to regulation under these rules and regulations. No person shall make any use of the water of any designated ground water control area of the State except in compliance with these rules and regulations. No right, title, or interest in the use of any of the ground water resources of this State can be acquired by means of prescription after the effective date of the Ground Water Use Act. Nothing contained in this section; these regulations or the Ground Water Use Act, however, shall be construed as an admission or declaration on the part of the State of any prescriptive rights to ground water in favor of any private party.

The basic principle in regulating, limiting, and apportioning the uses of ground water in the best interest of the people of the State shall be the realizing of the most beneficial uses of the State's ground water resources.

The regulation and apportionment of ground water uses in the State shall be limited to those areas determined by the Board of Land and Natural Resources as "designated ground water control areas". A designated ground water control area is an area in which the Board has found and publicly declared it necessary to regulate the uses of ground water because in its opinion such usage has caused or may cause within the foreseeable future: withdrawals that exceed the recharge; declining water levels or heads; deterioration in the quality of water due to increasing chloride content; excessive waste of water which can be prevented; or a situation in which any further water development would endanger the ground water aquifer or the existing sources of supply.

Within a designated ground water control area, individual household uses of ground water shall be exempt from regulation, but reports of such uses must be filed with the Board.

Within a designated ground water control area, existing ground water uses which are lawful and beneficial may be preserved and continued if such uses are properly declared to and certified by the Board. However, the right to such preserved uses may be completely or partly lost through non-use.

Within a designated ground water control area, all ground water withdrawals except individual household uses and preserved uses, shall be strictly regulated by the issuance of permits to use ground water and permits to supply ground water.

The Chairman shall invite the non-voting participation of the managing officer or engineer of the appropriate County water supply agency in matters relating to ground water use of the County and encourage cooperative agreements among water users when deemed appropriate. Federal, state and local governments, corporations, associations, groups, and individuals shall be encouraged to carry out practices of conservation of water use.

Any person adversely affected by any decision of the Board concerning certification or non-certification of preserved uses or issuance or non-issuance of a permit to use or supply water in designated ground water control areas may request an administrative hearing by the Board.

Any person aggrieved by an order or decision of the Board may seek a judicial review in the appropriate circuit court for a review of the Board's order or decision.

1.7 Penalties.

After written notice and failure to correct any violation of these Regulations within the time prescribed in the notice, any person violating these Regulations shall be fined not more than ~~\$500~~ \$100 for each offense, and when there is a waste, degradation, or damage of resources which is immediately controllable, each day's continuance of the same after the day of receipt of such notice, shall constitute a separate offense. When there is a waste, degradation, or damage of resources which is not immediately controllable (for example, when recasing or sealing of a well is necessary), each day's continuance of the same after the time prescribed in the written notice of such violation shall constitute a separate offense. For a violation of any record keeping or reporting prescribed under Rule 8, each day's continuance of the same after thirty days have elapsed from the time of receiving written notice of the violation shall constitute a separate offense.

3.1 Purpose.

When it can be reasonably determined after conducting scientific investigations and research that the beneficial uses of the ground water resources in an area are being threatened by existing or proposed withdrawals of water, it shall be the duty of the Board to designate such areas for the purpose of establishing administrative control over the withdrawals of ground water in such areas to insure the most beneficial use, development, or management of such ground water resources in the interest of the people of the State.

5.4 Approval/Rejection of Applications for Permit.

Based upon the findings of fact concerning an application for a permit and within 180 days or more as the Board may allow of the date such application is received by the department, the Board shall either approve in whole or in part or reject such application and the issuance of a permit. The Board may approve the issuance of a permit for a lesser amount of water than that requested in an application for permit. The Board shall not approve the issuance of a permit for any amount of water that cannot be put to beneficial use within one year from the date of issuance of the permit or such additional time as the Board may allow. All permits approved and issued by the Board shall be upon the terms and conditions prescribed in Rule 5.6 and such other terms and conditions as the Board may deem necessary to carry out the intent of the Ground Water Use Act. The Board shall reject any application and disapprove the issuance of a permit if it finds that such application will not provide for the most beneficial use of the ground water resources occurring within the designated area in the best interest of the people of the State. However, any person who may be adversely affected by the approval or rejection of a permit may request and receive an administrative hearing by the Board.

RULE 7

WASTE AND DETERIORATION OF GROUND WATER PROHIBITED

Within a designated ground water control area, every well shall be so constructed, maintained and operated as to prevent or minimize the surface or sub-surface waste, contamination, deterioration of quality, salt water upconing, or salt water encroachment into any ground waters.

The owner of any well which is determined to be wasting ground water or causing contamination, deterioration of quality, salt water upconing or salt water encroachment into any ground waters connected with

such well or any other well in a designated ground water control area shall be required to re-case, cement, deepen, plug back, cap or otherwise alter such well at owner's expense, in order to insure the most beneficial use and development of the ground water resources in the interest of the people of the State.

The owner of any well may be required to modify or cease any withdrawal or pumping practices that the ~~Chairman~~ Board may reasonably deem likely to result in an excessive or dangerous deterioration in the quality of ground waters of other wells.

The penalty for violations of Rule 7 shall be as provided in Rule 1.7.

8.2 Applications to Drill, Deepen, Redrill, Plug, or Alter Well and to Install, Replace, or Modify Pump; Permits; Filing Fee.

Within a designated ground water control area or not, before any person commences (1) the drilling of any new well, (2) the deepening, redrilling, plugging or altering of any existing well, (3) the installation of any new pump or modification or replacement of any existing pump, (4) the redrilling and reconstruction of any abandoned or unused well, or (5) the abandonment of any well, the owner of such well must make an appropriate application to do such work to the Chairman on forms furnished by the Department. Drilling or construction operations shall not commence until an appropriate well permit has been issued by the ~~Board~~ Chairman. Applications and permits for wells not located in a designated ground water control area shall not be disapproved. However, if the well proposed to be drilled or modified is located within a designated ground water control area, consideration of the application or the approval of a permit for any such work shall not be given unless a permit to use water or to supply water therefrom has been issued by the Board.

1.5 Definitions.

~~"Well" means any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed into the ground to or penetrating any aquifer or basin when the intended use of such excavation is for the location, exploration, diversion, or withdrawal of any ground water by natural pressure or artificial means, or, is for the diversion, injection, recharge, or disposal of any water or liquid waste into any underground formation.~~ an artificial excavation or opening into the ground, or artificial enlargement of a natural opening by which ground water is drawn or is capable of being drawn from the ground; the term includes, but is not limited to, circular, vertical, horizontal or approximately horizontal tunnels, and vertical or inclined shafts.

STATE OF HAWAII
BOARD OF LAND AND NATURAL RESOURCES
Honolulu, Hawaii

DRAFT
10/3/78
ed Siskind
PROOFREAD - 6 Oct 78

REGULATIONS
FOR THE CONTROL OF GROUNDWATER USE
IN DESIGNATED AREAS OF THE STATE

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REGULATIONS
FOR THE CONTROL OF GROUND WATER USE
IN DESIGNATED AREAS OF THE STATE

RULE NO. 1
GENERAL

1.1 Authority.

These regulations are promulgated under Chapter 177, "Ground Water Use", of the Hawaii Revised Statutes.

1.2 Incorporation by Reference.

Any document or part therein incorporated by reference herein is a part of these regulations as though set out in full.

1.3 Revisions.

These regulations may be revised or repealed at any time by the Board in accordance with Chapter 91 of the Hawaii Revised Statutes.

1.4 Legal Conflicts With Other Statutes.

These regulations, promulgated under Chapter 177, are not intended to repeal Chapter 178 of the Hawaii Revised Statutes. However, in the event of conflict, Chapter 177 and these regulations shall prevail.

1.5 Definitions.

"Beneficial use" means use of water, including the method of diversion, storage, transportation, and application, that is reasonable and consistent with the public interest in the proper utilization of water resources, including, but not limited to, domestic, municipal, military, agricultural, and industrial uses.

"Board" means Board of Land and Natural Resources, State of Hawaii, or its designated representative.

"Chairman" means Chairman of the Board of Land and Natural Resources, State of Hawaii, or his designated representative.

"Department" means Department of Land and Natural Resources, State of Hawaii.

"Designated ground water control area" means an area in which the Board finds that the ground water must be regulated and protected for its best utilization, conservation, and protection in order to prevent threat of exhaustion, depletion, waste, pollution, or deterioration by salt encroachment or an area in which the Board finds that the ground water must be regulated and protected in order to protect the ground water resources from exhaustion, depletion, waste, pollution, or deterioration by salt encroachment.

(LAW)

177-5(5)

178
and "178",
Generally

"Ground water" means any water found beneath the surface of the earth, whether in perched supply, dike-confined, flowing, or percolating in underground channels or streams, under artesian pressure or not, or otherwise.

"Ground Water Use Act" means Chapter 177, "Ground Water Use", of the Hawaii Revised Statutes.

"Head" means the water table level or piezometric level at any given point of an aquifer, referenced to sea level.

^P
"person" means the plural as well as the singular and includes governmental entities and agencies, public and private corporations, associations, estates, and individuals.

"Well" means ^{an artificial excavation or opening into the ground, or artificial} ~~any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed into the ground to or penetrating any aquifer or basin when the intended use of such excavation is for the location, exploration, diversion, or withdrawal of any ground water by natural pressure or artificial means, or, is for the diversion, injection, recharge, or disposal of any water or liquid waste into any underground formation.~~

1.6 Principles of Ground Water Use Regulation.

The ground water of designated ground water control areas of the State is subject to regulation under these rules and regulations. No person shall make any use of the water of any designated ground water control area of the State except in compliance with these rules and regulations. No right, title, or interest in the use of any of the ground water resources of this State can be acquired by means of prescription after the effective date of the Ground Water Use Act. Nothing contained in ~~this section~~, ^{these regulations or the} however, shall be construed as an admission or declaration on the part ^{Ground Water Use Act,} of the State of any prescriptive rights to ground water in favor of any private party.

The basic principle in regulating, limiting, and apportioning the uses of ground water in the best interest of the people of the State shall be the realizing of the most beneficial uses of the State's ground water resources.

177-5(5) The regulation and apportionment of ground water uses in the State shall be limited to those areas determined by the Board of Land and Natural Resources as "designated ground water control areas". A designated ground water control area is an area in which the Board has found and publicly declared it necessary to regulate the uses of ground water because in its opinion such usage has caused or may cause within the foreseeable future: withdrawals that exceed the recharge; declining water levels or heads; deterioration in the quality of water due to increasing chloride content; excessive waste of water which can be prevented; or a situation in which any further water development would endanger the ground water aquifer or the existing sources of supply.

Within a designated ground water control area, individual household uses of ground water shall be exempt from regulation, but reports of such uses must be filed with the Board. -5(4)

→ enlargement of a natural opening by which ground water is drawn or is capable of being drawn from the ground; the term includes, but is not limited to, circular, vertical, horizontal or approximately horizontal tunnels, and vertical or inclined shafts.

Within a designated ground water control area, existing ground water uses which are lawful and beneficial may be preserved and continued if such uses are properly declared to and certified by the Board. However, the right to such preserved uses may be completely or partly lost through non-use.

Within a designated ground water control area, all ground water withdrawals except individual household uses and preserved uses, shall be strictly regulated by the issuance of permits to use ground water and permits to supply ground water.

→ The Chairman shall invite the non-voting participation of the managing officer or engineer of the appropriate County water supply agency in matters relating to ground water use of the County and encourage cooperative agreements among water users when deemed appropriate. Federal, state and local governments, corporations, associations, groups, and individuals shall be encouraged to carry out practices of conservation of water use.

Any person adversely affected by any decision of the Board concerning certification or non-certification of preserved uses or issuance or non-issuance of a permit may request an administrative hearing by the Board.

to use or supply water in designated ground water control areas

Any person aggrieved by an order or decision of the Board may seek a judicial review in the appropriate circuit court for a review of the Board's order or decision.

1.7 Penalties.

After written notice and failure to correct any violation of these Regulations within the time prescribed in the notice, any person violating these Regulations shall be fined not more than \$¹⁰⁰500 for each offense, and when there is a waste, degradation, or damage of resources which is immediately controllable, each day's continuance of the same after the day of receipt of such notice, shall constitute a separate offense. When there is a waste, degradation, or damage of resources which is not immediately controllable (for example, when recasing or sealing of a well is necessary), each day's continuance of the same after the time prescribed in the written notice of such violation shall constitute a separate offense. For a violation of any record keeping or reporting prescribed under Rule 8, each day's continuance of the same after thirty days have elapsed from the time of receiving written notice of the violation shall constitute a separate offense.

RULE 2 INDIVIDUAL HOUSEHOLD USES

2.1 Definition.

Individual household uses shall mean, in these regulations, the use of water by an individual, a family, or a household for: personal comforts and necessities; watering of stock in a non-commercial farm operation; or irrigation of a lawn or a family garden not exceeding 1/2 acre in area.

2.2 Exemption From Regulation[§]

All individual household uses shall be exempt from the certification and permit requirements of these regulations, except during water shortages or water emergencies under Sections 177-33 and 177-34 of the Hawaii Revised Statutes. However, no person initiating an individual household use of water within a designated ground water control area may take court action against any preserved or permitted uses therein.

2.3 Reports to be Filed.

The owner of any well, whether located in a designated ground water control area or not, drilled or used for individual household uses shall file with the Board well records and reports as prescribed in Rule 8.

177 - 5(4)

RULE 3 DESIGNATION OF GROUND WATER CONTROL AREAS

3.1 Purpose.

after conducting scientific investigations and research 177 - 5(5)

When it can be reasonably determined that the beneficial uses of the ground water resources in an area are being threatened by existing or proposed withdrawals of water, it shall be the duty of the Board to designate such areas for the purpose of establishing administrative control over the withdrawals of ground water in such areas to insure the most beneficial use, development, or management of such ground water resources in the interest of the people of the State.

3.2 Initiation by Chairman not in LAW

→ The designation of a ground water control area by the Board may be initiated upon recommendation by the Chairman. It shall be the duty of the Chairman to make such recommendations from time to time when, in his opinion, it is desirable or necessary to designate a ground water control area for the purpose stated in Rule 3.1 and there is factual data for a decision by the Board.

5(5)

3.3 Initiation by Interested Persons.

The designation of a ground water control area by the Board may also be initiated by any interested person by written petition to the Chairman ← proposing the designation of a specified area and presenting the reasons therefor. It shall be the duty of the Chairman to act upon the petition by ← making a recommendation for or against the proposed designation to the Board within 60 days after receipt of the petition or such additional time as may be reasonably necessary to determine that there is factual data to warrant the proposed designation.

3.4 Notice; Public Hearing Required.

When a recommendation for designation of a ground water control area has been accepted, the Board shall hold a public hearing and publish a notice of the hearing setting forth: (1) a description of the land area proposed to be designated in terms of appropriate legal subdivisions and tax map keys; (2) the purpose of the public hearing; and (3) the time, date, and place of the public hearing where written or oral testimony may be submitted and heard. Such notice shall be published once each week for three successive weeks in a newspaper of general circulation in the appropriate County and the last publication shall be not less than ten days nor more than thirty days before the date set for the hearing. Publication of the notice of public hearing shall be considered as sufficient notice to all landowners and water users who might be affected by the proposed designation.

3.5 Investigations Required.

Before any proposed ground water control area is designated by the Board, the Chairman ^{shall?} ~~may~~ conduct, cooperate with the appropriate Federal or County water agency, or administer contracts for the conduct of any scientific investigation or study deemed necessary for the Board to make a decision to designate a ground water control area.

In connection with such investigation or study the Chairman from time to time may require reports from ground water users as to the amount of ground water being withdrawn and as to the manner and extent of the beneficial use. Such reports shall be made on forms furnished by the Department.

3.6 Criteria for Designation.

In designating an area for ground water use regulation, the Board shall be guided in its decision by any of the following findings of fact:

- a. That the withdrawal of ground water exceeds the recharge.
- b. That ground water levels or heads are declining or have declined excessively.
- c. That the rates, times, spatial patterns, or depths of existing withdrawals of ground water are endangering the stability or optimum development of the ground water body due to upconing or intrusion of salt water. *encroachment?*
- d. That the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses. *5(5)*
- e. That, in the opinion of the Board, any proposed water development if constructed would: (1) lead to a condition of ground water overdraft relative to recharge or salt water encroachment; (2) lead to a decline in ground water level or head which would be detrimental to maintaining and achieving the optimum development of the ground water body; or (3) lead to a rise in chloride content which would be detrimental to maintaining the most beneficial uses of existing wells.
- f. That excessive preventable waste of water is occurring.

3.7 Findings of Fact; Decision of Board.

After the required public hearing and any investigations deemed necessary have been completed, the Chairman shall make a recommendation to the Board for decision. If the Board decides to designate a ground water control area it shall cause a notice of its decision to be published in a newspaper of general circulation in the appropriate county and when so published its decision shall be final unless judicially appealed in the appropriate circuit court. ←

3.8 Modifying and Rescinding Designated Areas.

→ The modification of the boundaries or the rescinding of existing designated ground water control areas by the Board may be initiated by the Chairman or by a petition to the Board by any interested person. The procedure for modifying the boundaries of an existing designated ground water control area or for rescinding an existing designated ground water control area shall be substantially as provided herein Rule 3 for the designation of a ground water control area. 5(7)

RULE 4 PRESERVATION OF EXISTING USES IN DESIGNATED AREAS

4.1 Existing Uses Defined.

Existing uses of water which may be preserved and continued when an area has been designated for ground water regulation and control shall mean any lawfully and beneficially used withdrawals of water from such designated ground water control area: (1) which are being made on the effective date of designation of the ground water control area; (2) which are planned to be made from any wells under construction on the effective date of designation by the Board; or (3) which have been made within the five years prior to the effective date of designation by the Board. However, such existing uses do not include individual household uses which are exempt from regulation in a designated ground water control area as prescribed in Rule 2.2, except for reporting of records. For the purposes of Rule 4, the effective date shall be the date ninety days prior to the date the Board designates a designated ground water control area.

4.2 Preservation of Existing Uses.

After the Board has designated a ground water control area, any existing uses of water as defined in Rule 4.1 within such a designated area may be preserved and continued; PROVIDED, that such existing uses remain beneficial and the user declares such uses, as prescribed in Rule 4.3. -15

4.3 Declaration of Existing Uses Required. - 16

Within 90 days after the date of public notice of designation of a ground water control area or such additional time as the Board may allow, any person making an existing use[s] of water and desiring to preserve or continue such use must file a certified declaration to that effect for each well with the Department in

Honolulu, Hawaii, on forms furnished by the Department. Each such certified declaration of an existing use shall contain the following information:

(1) the beneficial use to which the existing withdrawal has been put; (2) the quantity of water that has been used; (3) the times and dates of withdrawal of water for beneficial use; (4) in the case of beneficial use for irrigation, a description of the land irrigated and the name of the owner or user thereof; (5) so far as it may be available, descriptive information concerning each well or other works for the withdrawal of water, as required in Rule 5.2 for applicants for ground water use permits in designated areas; and (6) such other information as may be deemed necessary.

- 16(e)

If no declaration is filed for an existing use within the time allowed, the Board in its discretion may conclusively determine the extent of the uses preserved within a designated ground water control area; however, the claimant may apply to the Board for a reasonable extension of time for filing which shall not exceed an additional 90 days and which shall be granted only upon a showing of good cause for failure to file within the time allowed.

4.4 Certification of Existing Uses

- 16 (f) Within six months after a declaration has been properly filed, the Board shall certify or refuse to certify the declared water use. If certification is to be made, the Board shall issue a certificate which shall include a description of the beneficial uses preserved and a statement of the maximum daily and annual withdrawals preserved for each well. If the Board does not act upon a declaration within 6 months after the date of its filing, the Chairman shall certify the uses described in that declaration.

- 16(h) The Board shall hold a hearing upon the request of any person adversely affected by the certification or the refusal to certify any water use.

- 16(h) - 17(b)? The Board may refuse to certify a declaration of existing use if it has good reason to believe that the claimant has incorrectly or falsely declared his existing uses. In such case, the Board may make such investigations as it deems necessary to determine the existing use eligible for preservation under Rule 4 and thereupon shall certify only that portion of the declared existing use it deems eligible for preservation under Rule 4 or refuse to certify the declared existing use if found to be falsely declared.

4.5 Non-Modification of Preserved Uses. - 15(b)

Within a designated ground water control area, no preserved existing use of water may be modified by increasing the quantity of water used or by substantially changing the purpose or manner of the beneficial use, or the time of taking the water, or by changing the point of diversion of the water, unless authorized by the Board. However, any municipal corporation or person supplying a municipal corporation may increase its water use from a designated ground water control area by 100,000 gallons per day or 5 percent of the average per-day use during the year immediately prior to the date of designation of such ground water control area, whichever amount is the greater.

4.6 Exchange of Preserved Uses. - 17

Any person having a preserved use as described herein Rule 4, may voluntarily exchange his preserved use for a Permit to Use ground water or a Permit to Supply ground water.

When a person materially violates Rules 4.3 or 4.5, the Board in its discretion may enter an order that the violation constitutes an offer of exchange of that person's preserved use. -17(b)

4.7 Invalidation of Preserved Uses.

Within a designated ground water control area, any preserved uses not used for four consecutive years or for any five out of seven years shall automatically be invalidated.

In computing the period of non-use it shall be conclusively presumed that the following periods are periods of non-use: (1) any period of non-use during the three years prior to the effective date of designation of the ground water control area in which the preserved use is located, and (2) any period during which a declaration of an existing use was required to have been filed under Rule 4.3, but during which none was filed. Any year of non-use caused by a declared shortage of water due to natural conditions will be considered neither periods of use nor periods of non-use.

RULE 5 PERMITS TO USE WATER IN DESIGNATED AREAS

5.1 Use Permit Required.

When a ground water control area has been designated by the Board for administrative control to insure that the ground water resources therein are protected and used for the greatest benefit to the people of the State, no withdrawal of water shall be made nor shall any well or other works for such withdrawal be constructed until an application for a permit to use such water has been filed with and a permit has been issued by the Board; EXCEPT withdrawals for individual household uses and preserved uses described in Rules 2 and 4.

5.2 Applications for Use Permit; Filing Fee. -19

To withdraw ground water within a designated ground water control area, a person must first file with the Board an application for a permit to make such withdrawal and use of water. No withdrawal of water shall be made by the applicant until he has received a permit issued by the Board.

Each application for a permit to use water shall be made on forms furnished by the Department and shall include: the name and address of the applicant; the existing or proposed source of water supply; the nature and amount of the proposed beneficial use; the times of taking water; the survey location and description of the proposed well and related facilities; maps, plans and drawings; and such other information as may be necessary for the Board to determine the merits of the proposed water use, any hazards to public health, safety, or welfare, and the desirability of issuing a permit.

Each application for a permit to use water shall be accompanied by a non-refundable filing fee of \$100.

5.3 Consideration of Applications for Permit.

When an application has been properly filed, the Chairman shall investigate and consider the application and make a recommendation to the Board.

- 22 (b)

The Board shall issue a permit if the findings of fact are: (1) that there is water available for use, (2) that the proposed use of the water will be for a beneficial purpose, (3) that the water use proposed in the application will not impair the most beneficial use and development of the water resources of the State, and (4) that issuance of the permit will not substantially and materially interfere with any existing individual household uses, preserved uses, or permitted uses.

5.4 Approval/Rejection of Applications for Permit.

22

Based upon the findings of fact concerning an application for a permit, and within 180 days the Board shall either approve in whole or in part or reject such application or more as the Board and the issuance of a permit. The Board may approve the issuance of a permit may allow of the for a lesser amount of water than that requested in an application for permit. date such application is received by the Department, The Board shall not approve the issuance of a permit for any amount of water that cannot be put to beneficial use within one year from the date of issuance of the permit. All permits approved and issued by the Board shall be upon the terms and conditions prescribed in Rule 5.6 and such other terms and conditions as the Board may deem necessary to carry out the intent of the Ground Water Use Act. The Board shall reject any application and disapprove the issuance of a permit if it finds that such application will not provide for the most beneficial use of the ground water resources occurring within the designated area in the best interest of the people of the State. However, any person who may be adversely affected by the approval or rejection of a permit may request and receive an administrative hearing by the Board.

5.5 Public Notice of Approved Applications for Permit.

- 21 (b) At least ten days prior to the Board's approval of the issuance of a permit, a notice of the application for permit shall be published in a newspaper of general circulation in the county which would be affected by the issuance of such a permit.

5.6 Term and Conditions of Permits

- 24 a. Every permit approved and issued by the Board shall be for a specified period not exceeding 50 years. The period of each permit shall be set by the Board, depending upon the circumstances, beneficial use, and temporary or permanent nature of the water withdrawal involved.
- 25 b. Every permit approved and issued by the Board shall contain and be subject to the following conditions:
- (1) The water use must be for the beneficial purpose described in the permit;
 - (2) The use authorized by the permit must not interfere substantially and materially with existing individual household uses, existing preserved uses, or existing permitted uses;

(3) The use is subject to the shortage and emergency powers of the Board;

(4) The permit may be suspended or revoked in accordance with Rules 5.6c, 5.7 or 5.8;

(5) Such other conditions as the Board may deem necessary.

c. Every permit approved and issued by the Board shall contain the commencement and completion dates for construction of water works under the permit. The Board in determining the commencement and completion dates of such work shall take into consideration cost and magnitude of the project, the engineering and physical features involved, the existing conditions, and the public interests affected. The Board may extend the commencement or completion dates of the construction work prescribed in any permit if the permit holder can show good cause and good faith performance. If the commencement or completion date as prescribed or extended is not complied with, the Board shall notify the permit holder by certified mail that such permit will be revoked unless the holder can show good cause within 60 days. If good cause cannot be shown, such permit shall be revoked.

5.7 Relinquishment of Permits. - 27

Every permit shall provide, as a condition, that at any time or specified time after its issuance, the permit holder may be required to relinquish his permit to the Board with reasonable compensation therefor by the new applicant. The Board may require the relinquishment of a permit if it determines: (1) that there exists one or more applicants for permits to use water for purposes which would be more beneficial or as beneficial and which would provide a more complete utilization of the water being used by the permit holder; (2) that additional permits to make such uses cannot be issued because there is no reasonably available water; and (3) that such applicants for permits are willing and able to furnish reasonable compensation to the relinquishing permit holder.

5.8 Revocation of Permits. - 27

Any permit may be revoked in whole or in part for any material false statement in the application or in any report or statement of fact required to be filed, for any violation of these regulations, for any violation of the conditions of the permit, or for non-use of the water permitted to be used.

Prior to the revocation of the permit in whole or in part, the Board shall give written notice to the permit holder of the facts which warrant such revocation and provide an opportunity for an administrative hearing.

5.9 Renewal of Permits. - 28

A permit may be renewed after one-half of its term has expired by filing an Application for Renewal on forms furnished by the Department.

Board - 28(b)

If an application for the renewal of any permit issued for a term of more than one year has not been filed six months prior to such permit's expiration date, it shall be the duty of the Chairman to give written notice to the holder of all such permits to file an Application for Renewal before the expiration date. If an Application for Renewal of such a permit has not been filed 30 days after receipt of the written notice, the Board may proceed immediately to approve the issuance of a new permit to another person to make use of the unrenewed water use in whole or in part; PROVIDED, that the effective date of such new permit shall be upon the expiration of the existing permit.

The renewal of permits shall be for a term set by the Board and shall become effective upon the date of issuance, except as the Board may otherwise provide.

- 28(c) The Board shall hold a hearing upon the request of any person adversely affected by the renewal or the refusal to renew a permit.

RULE 6 PERMITS TO SUPPLY WATER IN DESIGNATED AREAS

6.1 Supply Permit Required.

- 20 Within a designated ground water control area, no person shall contract to supply or sell any ground water to another person without receiving Board approval and no person shall contract to obtain any ground water supply from any person not holding a permit to supply water.

6.2 Applications for Supply Permits; Approval; Filing Fee.

- The filing of an application for a permit to supply water and the issuance of a permit to supply water shall be substantially as prescribed in Rule 5; PROVIDED, that approval of such permits shall not be withheld except for good cause and that such permits shall be deemed approved by the Board if the Board does not act or commence hearings within 90 days after an application for a permit to supply water has been filed.
- 20(c)

- Each application for a permit to supply water shall be accompanied by a non-refundable filing fee of \$100.
- 32

RULE 7 WASTE AND DETERIORATION OF GROUND WATER PROHIBITED - 5(11)

Within a designated ground water control area, every well shall be so constructed, maintained and operated as to prevent or minimize the surface or sub-surface waste, contamination, deterioration of quality, salt water upconing, or salt water encroachment into any ground waters.

The owner of any well which is determined to be wasting ground water or causing contamination, deterioration of quality, salt water upconing or salt water encroachment into any ground waters connected with such well or any other well in a designated ground water control area shall be required to re-case, cement, deepen, plug back, cap or otherwise alter such well at owner's expense, in order to insure the most beneficial use and development of the ground water resources in the interest of the people of the State.

The owner of any well may be required to modify or cease any withdrawal or pumping practices that the Chairman may reasonably deem likely to result in an excessive or dangerous deterioration in the quality of ground waters of other wells. *Board*

The penalty for violations of Rule 7 shall be as provided in Rule 1.7.

RULE 8 GROUND WATER RECORDS AND REPORTS

8.1 General.

Ground water records and reports shall be required of all well owners to effectuate the Ground Water Use Act, including a meaningful information base for making administrative decisions on the designation, allocation and use of ground water resources in the State.

8.2 Applications to Drill, Deepen, Redrill, Plug, or Alter Well and to Install, Replace, or Modify Pump; Permits; Filing Fee

→ Within a designated ground water control area or not, before any person commences (1) the drilling of any new well, (2) the deepening, redrilling, plugging or altering ^{of} any existing well, (3) the installation of any new pump or modification or replacement of any existing pump, (4) the redrilling and reconstruction of any abandoned or unused well, or (5) the abandonment of any well, the owner of such well must make an appropriate application to do such work to the Chairman on forms furnished by the Department.

Drilling or construction operations shall not commence until an appropriate ^{well} permit has been issued by the ^{Chairman} ~~Board~~. Applications and permits for wells not located in a designated ground water control area shall not be disapproved. However, if the well proposed to be drilled or modified is located within a designated ground water control area, consideration of the application or the approval of a permit for any such work shall not be given unless a permit to use water or to supply water therefrom has been issued by the Board. *Chairman*

Each application shall contain the following information:

- a. The names and addresses of the landowner and well owner.
- b. A Tax Map Key plot plan map showing the location and elevation of the well and any benchmark, appropriately referenced to established property and elevation marks.

- c. Written approval of the owner of the land on which the well is located, if the applicant is not the land owner.
- d. The proposed amount and rate of withdrawal and use of water from the well.
- e. The plans and specifications for the construction, testing and pump installation for the proposed well.
- f. Such other information as the Board may deem appropriate to carry out the intent of the Ground Water Use Act.

For wells located in a designated ground water control area, each application for a permit to drill, deepen, redrill, plug or alter a well or to install, replace or modify a pump installation therein shall be accompanied by a non-refundable filing fee of \$100. However, the filing fee for minor alterations may be waived at the discretion of the Board. - 32

For wells located outside [?] [of] any designated ground water control area, each application for a permit need not be accompanied by a filing fee.

8.3 Supplementary Applications.

A Supplementary Application on forms furnished by the Department must be filed with the Board if there is any contemplated change in the original approved application. Written approval for such change must be received from the Board before such change of work is started. ←

8.4 Driller's Well Completion Report. ? 178-6

Within a designated ground water control area or not, within ^{90 days in 178} (60 days) after completion of any work on a well, the person drilling, installing a pump in, or altering any well shall file with the Chairman a Driller's Well Completion Report on forms furnished by the Department. ← The Driller's Well Completion Report shall include as a minimum the following information, where applicable: State well number; well head and casing elevations; tax map key; method of construction; depth, diameter, and general specifications of the well; thicknesses of the sub-surface formations penetrated by the well; specifications and depth of all casing and grouting installed; pumping test results, including rates of pumping, drawdown of the water level, and chloride content of the pumped water; depth to and elevation of the static water level measured above mean sea level datum; shut-in piezometric water level measured above mean sea level datum, if the well is artesian; and such other information as may be reasonably required by the Department. ← br d?

8.5 Well Records. 178-6

The owner of any well drilled for ground water shall keep, or cause to be kept a careful and accurate well log, history of the drilling of the well including lithology and depths of formations encountered, water-bearing formations, monthly ground water discharge or withdrawal, static water levels, chloride contents and temperatures of the ground water, and any other well surveys and logs of the characteristics of the well. These well records shall be subject, during business hours, to the inspection of the Chairman 178-9

Bond?

or his designated representative. The requirement for the keeping of well records shall not be construed to limit or restrict the Department from requiring the furnishing of such additional data or reports relating to the withdrawal or use of water or such data or reports as may appear to be necessary or desirable, either generally or specifically, for the prevention of waste and determining the most beneficial uses of the ground water resources in the State.

The owner of any well shall keep a survey map of the well location referenced to the property boundaries and shall establish a readily identifiable elevation benchmark on the well head or well site determined by a surveyor licensed by the State.

8.6 Discharge Tests.

Within a designated ground water control area or not, the owner of any new or reconstructed well drilled for ground water shall perform or cause to be performed an appropriate discharge test to determine the hydraulic characteristics of the well and the hydrologic characteristics of the ground water aquifer tapped by the well.

If the well is located within a designated ground water control area, the owner shall perform or cause to be performed such discharge tests as may be prescribed in the water use or water supply permit issued for the well.

8.7 Annual Water Use Reports.

Within a designated ground water control area or not, the owner of any producing ground water well shall file with the Chairman on or before the 60th day after the end of each calendar year an annual Water Use Report on forms furnished by the Department. Such reports shall include the amount and rate of water withdrawn and used for each month of the calendar year and such other information as may be reasonably required by the Department. Bond?

The owner of any producing ground water well shall be responsible for determining and recording water withdrawals on a monthly basis, using a measuring device or method of determining the amount of withdrawal deemed appropriate by the Chairman. ←

8.8 Well Inspection.

178-9 177-5(2)

Bond?

Any authorized employee or representative of the Department may enter on the property of any well owner or user at any reasonable time of the day to inspect any well and its appurtenances for the purpose of investigating any matter connected with the intent and purposes of the Ground Water Use Act.

RULE NO. 9
INJUNCTIONS

177-10

If it appears to the Board that any person has engaged or is about to engage in any act or practice constituting a violation of these Regulations or any rule, regulation, or order of the Board, the Board may bring an action in the appropriate circuit court to enjoin any such acts or practices and to enforce compliance with these Regulations or any rule, regulation, or order of the Board. Upon a proper showing, the court shall grant a restraining order, temporary or permanent injunction, or other appropriate relief. The Board shall not be required to post a bond.

RULE NO. 10
RIGHT OF ENTRY

177-5(2)

178-9

Any authorized representative or employee of the Department shall have free access and right of entry to all wells, producing facilities and their appurtenances for the purpose of inspecting or testing wells and equipment and for the purpose of determining compliance with these Regulations.

RULE NO. 11
SEVERABILITY

The provisions of these Regulations are severable. If any provision or application of these Regulations is held invalid, such invalidity does not affect other provisions or applications of these Regulations which can be given effect without the invalid provision or application.

The Board of Land and Natural Resources on _____, 19____, approved and adopted these rules and regulations as Regulation ____ of the Department of Land and Natural Resources.

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

APPROVED AS TO FORM:

And By _____
Member
Board of Land and Natural Resources

Deputy Attorney General

Dated: _____

APPROVED THIS _____ day of
_____, 19____

George R. Ariyoshi
Governor of Hawaii

PART II - DRILLING FOR GEOTHERMAL RESOURCES

Rule 8 - GENERAL

Rule 8 - GENERAL

8.1 Purpose ^{in the State of Hawaii}

8.1 All wells drilled for the discovery, evaluation, development, production, and utilization of geothermal resources or by-products shall be subject to Part II of these regulations and shall be drilled, operated, and maintained or abandoned in such a manner as to prevent or minimize damage to life, health, property, environment, geothermal resources, and ~~or waste of~~ geothermal resources.

8.2 Definitions

In addition to Rule 10.6, "Definitions", Part I, of these regulations, the term ~~being defined~~ ^{applying to Part II} shall apply to Part II.

8.3 Designation of Agent

8.3 ~~Designation of Agent~~ Every owner or operator of any well shall designate an agent, giving his post office address, who resides in ^{the State of Hawaii} this state, upon whom may be served all orders, notices, and processes of the ^{Department} supervisor, board, or any court of law. Every person so appointing an agent shall, within five days after the termination of any such agency, notify the ^{Chairman} supervisor, in writing of such termination, and unless operations are discontinued, shall appoint a new agent. All changes in the address of an agent must be recorded with the ^{Chairman} division within five days of the change of the address.

The deepening, redrilling, plugging or altering of casing of an existing well.

Rule 9 - DRILLING OF GEOTHERMAL WELLS

9.1 Notice of Intent to Drill; Permit Rules — and —

~~1931. NOTICE TO DRILL.~~ Before an owner or operator can commence the drilling of a new well or the redrilling of an abandoned well, he must file with the ~~supervisor or the district deputy~~ a written Notice of Intent ~~to commence drilling~~, accompanied by the appropriate fee and bond (see ~~Sections 1932 and 1933~~). Drilling shall not commence until approval is given by the ~~supervisor or the district deputy~~. ~~If the division fails to give the owner or operator written response to the notice within 10 working days, such failure shall be considered as an approval of the notice.~~ If operations have not commenced within one year of the receipt of the notice, the notice will be canceled. The Notice to Drill shall contain the following:

(a) The exact location of the well and the elevation of the floor or Kelly bushing of the proposed derrick. A resurvey by a licensed surveyor may be required if there is a dispute with the neighboring landowner over the location of a well or if the ~~division~~ finds unreconcilable differences in the survey data submitted.

(b) The number or other designation by which the well shall be known. Such number or designation shall be subject to the approval of the supervisor.

(c) The operator's proposed casing program.

(d) The owner's or operator's estimate of the depths between which production will be attempted.

Notices of Intent to Drill must also be filed with the Chairman for shallow temperature test holes and drilling shall not commence until a permit is issued by the Chairman.

9.2 Supplementary Notice of Intent to Drill

~~1932. SUPPLEMENTARY NOTICE.~~ A supplementary notice must be filed if there is any change in the original Notice of Intent to Drill ~~Geothermal Well~~ (see ~~Section 1931~~) and a written approval must be received from the ~~supervisor or his deputy~~ before the work is started (see ~~Section 1914~~).

9.3 Filing Fees

Each Notice of Intent to Drill for shallow temperature test holes shall be accompanied by a non-refundable filing fee in the amount of \$25. Each Notice of Intent to Drill a well shall be accompanied by a non-refundable filing fee in the amount of \$100.

9.4 Bonds

~~1034. BONDS~~ (a) All wells, ~~except those excluded under Section 3714.5,~~ require a bond. Each person who engages in the drilling, redrilling, deepening, maintaining or abandoning of any well shall file with the supervisor an indemnity bond in the sum of five thousand dollars (\$5,000) for each well or twenty-five thousand dollars (\$25,000) for any number of wells. The bonds shall be executed by such person, as principal, and by an authorized surety company, as surety, conditioned that the principal named in the bonds shall faithfully comply with ~~all the provisions covered by Chapter 4, Division 3, of the Public Resources Code.~~ ^{these regulations} The bonds shall secure the State against all losses, charges, and expenses incurred to it by the principal named in the bond.

^{shall} (b) Bonds remain in force for the life of the well or wells and may not be released until the well or wells are properly abandoned or another valid bond is substituted therefor. Any person who acquires the ownership or operation of any well or wells shall within five days after acquisition file with the supervisor ^{Chairman} an indemnity bond in the sum of \$5,000 for each well acquired or a \$25,000 blanket bond for any number of wells acquired.

9.5 Well Spacing

A. ~~Any well drilled~~ ^{for} for the discovery and/or production of geothermal resources or ^{of geothermal resources} as an injection ~~well~~ shall be located more than 100 feet from and within the outer boundary of the parcel of land on which the well is situated, or more than 100 feet from a public road, street, or highway dedicated prior to the commencement of drilling. [This requirement may be waived by the ~~Administrator~~ ^{Chairman} under certain special conditions.]

~~Where~~ ^{under} Where several contiguous parcels of land ^{more} in one or different ^{more} ownerships are operated as a single geothermal resources [lease or] operating unit, the term "outer boundary line" means the outer boundary line of the lands included in ^{such a} ~~the~~ [lease or] unit.

^{Chairman} ~~The State Engineer~~ shall approve the proposed well spacing programs or prescribe such modifications to the programs as it deems necessary for proper development giving consideration to such factors as, but not limited to, topographic characteristics of the area, hydrologic, geologic, and reservoir characteristics of the area, the number of wells that can be economically drilled to provide the necessary volume of geothermal resources for the intended use, minimizing well interference, unreasonable interference with multiple use of lands, and protection of the environment.

9.6 Directional Drilling.

~~By~~ Directional drilling. Where the surface of a parcel of land containing one acre or more is unavailable for drilling, ^{a directionally drilled} the surface well ^{location} may be located upon ^{the parcel} property which may or may not be contiguous. Such surface well ^{The} location ^{of such a well} shall not be less than 25 feet from the outer boundary of the parcel on which it is located ^{and} not less than 25 feet from an existing street or road. The production or injection interval of ^{such a} the well shall not be less than 100 feet from the outer boundary of the parcel into which it is drilled. ^{Chadwick} The Administrator ^{requires that} direct-
^{well} ional surveys ^{shall} be filed with the department for all wells directionally drilled.

9.7 Casing Requirements.

a. General

All wells shall be cased in such a manner as to protect or minimize damage to the environment, ~~usable~~ ^{prevent resources} ground waters ~~(if any)~~, geothermal resources, life, health and property. The permanent well head completion equipment shall

be attached to the production casing or to the intermediate casing if production casing does not ^{extend from the production to} reach to the surface.

^{General} Department specifications for casing strings shall be determined on a well-to-well basis. All casing strings reaching the surface shall provide adequate anchorage for blowout-prevention equipment, hole pressure control and protection for all natural resources. The ~~following~~ ^{described below} casing requirements are general ^{and} should be used as guidelines in submitting ^{proposed casing programs} proposals to drill ^{to be filed} required ^{with Notices of Intent to Drill}.

b. Conductor Pipe. ^{Conductor pipe shall be installed to a depth of} A minimum of ~~about 50~~ ⁵⁰ feet and a

maximum of 150 feet. In special cases the ~~Administrator~~ ^{Chairman} may allow conductor pipe to be run and cemented at deeper depths. ^{The} Annular space ^{shall} ~~is to~~ be cemented solid to the surface. (An annular) blowout-preventer ~~or~~ ^{in equipment} ~~equi-~~ ^(BPOC) valent approved by the ~~Administrator~~ ^{Chairman} shall be installed ^{The} on conductor pipe on all exploratory wells and on development wells when deemed necessary ~~XXX~~ by the ^{Chairman}.

c. Surface Casing. Surface casing shall be installed to

provide for control of formation fluids, for protection of ~~shall use~~ ^{resources} ground water ~~if any~~ and for adequate anchorage ~~for~~ ^{of} blowout-prevention equipment. All surface casing shall be cemented solid to the surface.

Surface casing shall be set to a depth equal to two times the ~~known or theoretical depth~~ ^{known or suspected} of the brackish water transition zone underlying ~~and~~ ^{ground} ~~potable~~ ^{basal} water body. The theoretical depth ^{in feet} shall be determined as forty (40) times the known or estimated ^{in feet above mean sea level} elevation of the ~~potable~~ ^{ground water} basal water level in the area being drilled. If ~~non~~ ^{ground water} ~~potable~~ ^{is not} basal water is present in the area the depth of the surface casing shall be approved by the ^{Chairman} but in no case shall the surface ^{casing} be set to a depth less than 200 feet below the ground surface. If ~~surface~~ ^{surface} geologist, hydrologist, or geothermal conditions are known in or in the vicinity of the area to be drilled, such conditions shall be used in determining and approving the depth of surface casing.

A second string of surface casing may be required if the first string has not been cemented through a ^{sufficient} series of low permeability, competent ^{rock formations} ~~lithologic units~~ and either a rapidly increasing thermal gradient or rapidly increasing formation pressures are encountered.

d. Intermediate Casing.

~~Intermediate Casing.~~ Intermediate casing shall be required for protection against anomalous pressure zones, cave-ins, washouts, abnormal temperature zones, uncontrollable lost circulation zones or other drilling hazards. Intermediate casing strings shall be cemented solid to the surface.

e. Production Casing.

~~Production Casing.~~ Production casing may be set above or through the producing or injection zone and cemented above the ^{suct}~~objective~~ zones. Sufficient cement shall be used to exclude overlying formation fluids from the zone, to segregate zones and to prevent movement of fluids behind the casing into zones that contain ~~usable~~ ground water. Production casing shall either be cemented solid to the surface or lapped into intermediate casing, if run. If the production casing is lapped into an intermediate string, the casing overlap shall be at least 50 feet, the lap shall be cemented solid and the lap shall be pressure tested to ensure the integrity of the lap.

⊕ In order to reduce casing corrosion, production casing used to produce corrosive brine reservoirs shall be of ^{the same}~~the~~ nominal inside diameter from the shoe of the casing to the ground surface.

4/2/84

9.8 Mud Return Temperature Logging.

^{drilling} The temperature of the return mud shall be monitored continuously during ^{portion of the drill}~~the~~ drilling of the surface casing hole. Either a continuous temperature monitoring device shall be installed and maintained in working condition, or the temperature shall be read manually. In either case, return mud temperatures shall be entered into the log book after each joint of pipe has been drilled down (about every 30 feet)

2.9 Electric Well Logging

126. ~~Electric Logging~~ All wells, except observation wells

, shall be logged with an induction electrical log, or ~~equivalent~~ ^{other approved log},
from total depth to the bottom of the conductor pipe, ^{before installing casing} except in the case where

air is used as the drilling medium. This requirement may vary ^{from area} ~~or be waived~~

~~by the Administrator~~ ^{Chairman}.

to area, depending upon the amount of subsurface geological ~~and~~ hydrological data is available, and may not be required under certain conditions, subject to the approval of the Chairman.

2.10 Blowout Prevention Equipment

^{General} ~~a. Blowout prevention equipment (BPOE)~~

~~1. Blowout-Prevention Equipment~~ ^{BOPE} capable of shutting-in the well during ^{any} ~~any~~ operation shall be installed on the surface casing and maintained ready for use at all times ^{as stated in Article 4.}

BOPE pressure tests shall be witnessed by ^{The Chairman or} ~~a Division~~ ^{his designated representative} engineer on all exploratory wells prior to drilling out the shoe of the surface casing. The decision to require and witness BOPE pressure tests on other types of wells shall be made on a well-to-well basis.

In any case, ^{The Chairman} ~~a department engineer~~ must be contacted

well in advance of a scheduled pressure test to allow time for travel to the well site to witness the test.

130 General. ~~Blowout Prevention Equipment~~ BOPE installations shall include

high temperature-rated packing units and ram rubbers if available and shall have a minimum working-pressure rating equal to or greater than the lesser of:

- (1) A pressure equal to the product of the depth of the BOPE anchor string in feet times one (1) psi per foot;
- (2) A pressure equal to the rated burst pressure of the BOPE anchor string; or
- (3) A pressure equal to 2000 psi.

b. BOPE Classes. The ~~following~~ requirements for Blowout prevention equipment shall be guided by the following:

- (1) ~~NO~~ BOPE; Required for ^{known} shallow, low temperature, low pressure areas where down-hole water temperatures are less than 100 degree Celsius at depths less than 500 feet or where temperatures and pressures are unknown ^{at the proposed depth of drilling}.
- (2) CLASS 2M BOPE (API Class 2M-A or 2M-RE). Required for low pressure areas where ^{known} temperatures are above 100 degree Celsius at depths less than 2,000 feet, or where subsurface temperatures and pressures are unknown and the proposed depth of drilling is less than 2,000 feet.

Equipment shall include:

- (1) Annular BOPE or pipe-ram/blind-ram BOPE with minimum working-pressure ratings of 1,000 psi shall be installed on the ~~surface~~ casing so that the well can be shut-in at any time;

- (2) Hydraulic and/or manual actuating system;

- (3) Kelly cock;

- (4) A fill-up line installed above the BOPE;

- (5) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; ^{and}

- (6) A blow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner so as to permit containment of produced fluids and to minimize any safety hazard to personnel;

- (7) All lines and fittings shall be steel and have a minimum working-pressure rating of at least that of the BOPE.

(3) CLASS 3M BOPE (API Class 2M - RSRA equivalent)

Required for medium pressure areas where subsurface ~~temperatures and pressures~~ are ~~less than~~ 1000 psi or where pressures are unknown and the proposed total depth of the well is greater than 2000 feet.

Equipment shall include:

~~Any~~ Annular BOPE and pipe-ram/blind-ram BOPE with a minimum working-pressure rating of 2,000 psi ~~shall be~~ ^{on the surface casing} installed so that the well can be shut-in at any time ^{and with a} The double-ram preventer ~~shall~~ ^{ing} have a mechanical locking device;

~~Any~~ A hydraulic actuating system utilizing an accumulator of sufficient capacity and a high pressure auxiliary backup system. [This total system shall be] equipped with dual controls, one at the driller's station and one at least 50 feet away from the well head;

~~Any~~ Kelly cock and standpipe valve;

~~Any~~ A fill-up line installed above the BOPE;

~~Any~~ A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; and

(3) A blow-down line fitted with two valves installed below the BOPE ~~the~~ ^{with} blow-down line ~~shall be~~ directed in such a ^a manner ~~so~~ as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(4) CLASS 1A BOPE; Required in areas where dry steam is known to exist and/or formation pressures are less than hydrostatic and air is used as the drilling medium. Equipment shall include:

~~Any~~ A rotating-head installed at the top of the BOPE stack;

~~Any~~ A pipe-ram/blind-ram BOPE, with a minimum working-pressure rating of 1,000 psi, installed below the rotating-head so that the well can be shut-in at any time;

~~Any~~ A banjo-box steam diversion unit installed below the double-ram BOPE, fitted and a muffler capable of lowering sound emissions to within acceptable standards;

No
formation

102 ~~A~~ blind-ram BOPE, with a minimum working-pressure rating of 1,000 psi, installed below the banjo-box so that the well can be shut-in while removing the rotating-head during bit changes;

103 ~~A~~ gate valve, with a minimum working-pressure rating of 300 psi, installed below the blind-ram so that the well can be shut-in after the well has been completed, prior to removal of the BOPE stack;

104 ~~All~~ ram-type BOPE shall have a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high-pressure backup system; *and*

105 ~~Dual~~ control stations for hydraulic backup system; one at the driller's station and the other at least 50 feet away from the well head;

106 ~~Kelly~~ cock and standpipe valves;

107 ~~A~~ kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary; *and*

108 ~~A~~ flow-down line fitted with two valves installed below the BOPE. This line shall be directed so as to minimize any safety hazard to personnel.

109 All lines and fittings must be steel and have a minimum working-pressure rating of 1,000 psi If any portion of a well is drilled using mud, Class 2M BOPE shall be installed on the surface casing so that the well can be shut-in at any time.

9.11 Well Completions

135. ~~Official Completion~~ ^{or} A well is considered to be completed 30 days after drilling operations have ceased and the well is capable of producing a geothermal resource, or 30 days after it has commenced to produce a geothermal resource, unless drilling operations are resumed before the end of the 30-day period. For the purpose of filing drilling records, the time limit of 60 days begins either when the well commences production or injection, ^{the} drilling operations are suspended for more than 30 days, or the well is abandoned.

9.12 Well Tests

~~Chairman~~ ^{Chairman} Requirements The Administrator shall require such tests or remedial work as in his judgment are necessary to prevent ^{well} damage to life, health, property, ^{and minimize} ~~and~~ natural resources, ^{resources,} ~~to protect~~ geothermal reservoirs from

~~damage or to prevent the infiltration of detrimental substances into~~ ^{ground water resources,} ~~underground or surface water suitable for irrigation or domestic purposes, to the best interest of the neighboring property owners, and the environment.~~ Types of tests shall include ^{public.}

Casing tests, cementing tests, and equipment tests similar or equivalent to tests performed on oil and gas wells. ~~Bores shall be tested prior to drilling out the shoe of the surface casing and the Chairman or his designated representative shall~~

Rule 10 - Well Modification for Injection

10.1 Injection Wells

'Injection wells' are those wells used for ~~the~~ disposal of geothermal waste fluids, for ~~the~~ augmentation of geothermal reservoir fluids, for maintenance of reservoir pressures, or for any other purpose authorized by the Chairman. New wells may be drilled or old wells may be modified for such injection purposes. Note

10.2 Notice of Intent Required

~~Notice of Intent to Drill or~~ ^{Prior to modification of existing wells for} ~~Deepen, Redrill, Plug or Alter Casing, must be filed with the~~ ^{Chairman} together with filing fees and bonds, as required in Rule 9.1. Modification work shall not commence until a permit has been issued by the Chairman.

10.3 Surveillance of Injection Wells

Surveillance of injection wells is necessary on a continuing basis in order to establish that all

injection effluent is confined to the intended zone of injection. When an ^{owner or} operator proposes to drill a new well or modify an existing well he shall be required to demonstrate to the Chairman or his designated representative that the casing has complete integrity by approved test methods.

To establish the integrity of the annular cement above the shoe of the casing, the operator shall make sufficient surveys, within 30 days after injection is started into a well, to demonstrate that all the injected fluid is confined to the intended zone of injection. Thereafter, such surveys shall be made at least every two years, or more often if ordered by the ^{Chairman} supervisor. All such surveys shall be witnessed by ^{the Chairman or his designated representative} an engineer of the division.

After the well has been ^{injection} put into service, ^{the Chairman or his designated representative} an engineer of the division shall visit the wellsite periodically. At these times, surface conditions shall be noted and if any unsatisfactory conditions exist, the operator shall be notified of needed remedial work. If this required work is not performed within 90 days the ^{permit} approval issued by the ^{Chairman} division shall be rescinded. If it is determined that damage is occurring at a rapid rate, the ^{Chairman} supervisor may order that the repair work be done immediately.

Injection pressures shall be recorded and compared with the pressure reported on the appropriate forms. Any discrepancies shall be rectified immediately by the operator. A graph of pressures and rates versus time shall be maintained by the operator. Reasons for anomalies shall be promptly ascertained. If these reasons are such that it appears damage is being done, ^{Chairman} approval by the division may be rescinded, and injection shall cease. ^{the permit issued by the}

At the discretion of the ^{Chairman} operator, when an injection well has been left idle for a significant length of time, the operator shall be informed by letter that ^{the permit issued} approval for use of the well for injection purposes has been rescinded. In the event the operator intends to again use the well as an injector, he shall be required to file a notice proposing to demonstrate by means of surveys that the injected ^{fluids} water will be confined to the intended zone of injection.

of Intent,
an appropriate

for injection purposes

Rule 11- Well Maintenance

11.1 Maintenance and appurtenances such as all producing wells, well heads, separators, pumps, mufflers, manifolds, valves and pipelines shall be maintained in good condition in order to prevent loss of or damage to life, health, property, natural resources, and environment. Periodic corrosion surveillance may be conducted by the Chairman or his designated representative.

Rule 12 - Well Abandonment

12.1 Notice of Intent Required

The owner or operator of a well to be abandoned must file with the Chairman a Notice of Intent to Drill, prior to any such work on the well. The ^{operator's} proposed plans for abandonment shall be subject to approval prior to issuance of a permit to abandon by the Chairman.

12.2 General Requirements

a. The ^{owner or operator} ~~lessee~~ shall promptly plug and abandon any well on the leased land that is not in use or demonstrated to be potentially useful. No well shall be abandoned until its lack of capacity for further profitable production of geothermal resources has been demonstrated to the satisfaction of the ^{Chairman} ~~Supervisor~~. No well shall be plugged and abandoned until the manner and method of plugging have been approved or prescribed by the ^{Chairman} ~~Supervisor~~.

b. Cement used to plug any geothermal resources well, except that cement or concrete used for ~~sealing~~ ^{plugging} shall be placed in the hole by ^a ~~the~~ Good quality, heavy drilling fluid approved by the supervisor shall be used to replace any water in the hole and to fill all portions of the hole not plugged with cement.

(f) All cement plugs, with the possible exception of the surface plug, shall be pumped into the hole through drill pipe or tubing.

c. ~~the~~ All open annuli shall be filled solid with cement to the surface.

d. Each Sundry Notice (Form 9-331) shall include all information required under 30 CFR 270.45 and 270.72. Any bond or rider thereto covering a lease or an individual well ~~thereon~~ shall remain in full force and effect until the ~~lease or individual~~ well is properly abandoned and the surface properly restored. Written approval of the abandonment must be obtained from the Supervisor before release of any bonds will be recommended.

A. ~~the~~ Subsequent to the ^{plugging and operations in} abandonment of the hole, ~~all~~ casings shall be cut off at least 6 feet below the surface of the ground, all concrete cellars and other structures shall be removed, and the surface location restored, as near as practicable, to original conditions.

A. ~~the~~ History of Geothermal Resources Well, shall be filed within 60 days after completion of abandonment; except in the case of a ~~designated~~ prospect well which extends the time period to six months after abandonment.

such report shall be filed within

(6) All cement plugs, with the possible exception of surface plugs, shall be pumped into the hole through drill pipe or tubing.

- ~~Attention~~
- 12.3 Cementing Requirements (as determined by the Chairman)
- If ~~there~~ ^{usable} ~~is~~ ^(as determined by the Chairman) ~~no~~ ^{usable} ground water resources exist, a minimum of 100 ^{linear} feet of cement shall be placed straddling the interface or transition zone between fresh water and salt water in open hole or behind casing as the case may be.
 - ~~A minimum of~~ ^{One hundred} (100) ^{linear} feet of cement ~~shall~~ shall be placed straddling the bottom of the conductor pipe and the shoes of all casing.
 - ~~A minimum of~~ ^{One hundred} (100) ^{linear} feet of cement ~~shall~~ shall be placed straddling (100 ^{linear} feet) below and above geothermal zones whether uncased or cased with perforated casing.
 - ~~A minimum of~~ ^{Fifty} (50) ^{linear} feet of cement shall be placed above the top of casing liners.
 - ~~A minimum of~~ ^{One hundred} (100) ^{linear} feet of cement shall be placed straddling casing stubs and laps, ~~if~~ ^{unable to enter casing} stubs or laps, ~~a minimum of~~ 100 ^{linear} feet of cement shall be placed ~~above~~ ^{above the top of} the stubs or laps.
 - If casing is collapsed, etc., ~~100 linear feet of~~ cement shall be placed in the geothermal production zone or perforated section of casing and extending 100 ^{linear} feet above such zone or perforated section by squeezing with a retainer or braden head.
 - A minimum of 50 ^{linear} feet of cement shall be placed below the surface of the well, using neat cement or ^{ready mix} concrete ~~mix~~.

12.4 Deserted Wells:

The Chairman may order the abandonment of any well that has been deserted whether or not any damage is occurring or threatened. ~~Removal~~ Removal of drilling rig is prima facie evidence of desertion after the elapse of six months unless a request for an extension of time for not more than an additional six months is filed with the Chairman, ~~and~~ For good cause shown, The Chairman may extend such additional period.

Rule 13.- Well Records ^{13.1-13.2}

13.1 General

~~Records.~~ The owner or operator of any well shall keep, or cause to be kept, a careful and accurate log, core record, and history of the drilling of the well. The log shall be kept in the local office of the owner or operator and together with the tour reports of the owner or operator, shall be subject, during business hours, to the inspection of the ^{Chairman or his designated representative} ~~Administrator or his designee~~.

13.2 Records to be filed

Within 60 days after the completion of any well, the owner or operator shall file with the Chairman the following ^{well} records:

- a. ~~the~~ Drilling Log and Core Record. The drilling log shall show the lithologic characteristics and depths of formations encountered, the depths and temperatures of water-bearing and steam-bearing strata, the temperatures, chemical compositions, and other chemical and physical characteristics of fluids encountered from time to time, so far as ascertained. The core record shall show the depth, lithologic character and fluid content of cores obtained, so far as determined.

b.

(a) Well History. The history shall describe in detail the chronological order on a daily basis all significant operations carried out and equipment used during all phases of drilling, testing, completion, recompletion and abandonment of the well.

C. ~~the~~ Well Summary Report. The well summary report shall accompany the core record and well history reports. It is designed to show data pertinent to the condition of a well at the time of completion of work done. Well locations shown on this form shall be surveyed by a licensed surveyor.

d. ~~45~~ Electric Logs, Directional Surveys, physical or chemical logs, ^{Salinity logs,} tests, water analyses, ^{and} ~~or surveys including~~ temperature surveys, if ~~performed~~.

13.3 Annual Reports to be Filed.

The owner or operator of any well which is producing geothermal resources or by-product, shall file with the Chairman on or before the 30th day after the end of each calendar year, an annual report containing the amount of geothermal resources produced each month of the ^{calendar} year ended or the amount of fluid injected for ^{or being used for injection purposes} each month.

13.4 Confidentiality of Records.

Except for wells on State and reserved lands and as provided elsewhere in these regulations, the ^{well} records and reports required to be filed shall be held confidential by the Department except for the following information: (1) ^{well} owner or operator's name, (2) Well number, (3) Elevation of well ^{and} (4) location of well.

The records and reports of privately owned wells required to be filed with the Chairman

shall be open to inspection only to ~~those~~
~~authorized in writing by the operator~~
the Board, the Chairman, ~~and~~ designated
state officials; and to those persons
authorized in writing by the owner
or operator.

The records of and reports for a completed
or producing well that has been transferred
by sale, lease, or otherwise shall be
made available to the new owner ^{or} lessee,
~~or otherwise~~ for inspection or copying and
shall be made available for inspection
or copying by others authorized in
writing by such new owner or lessee.

13.5 Records ^{and reports} as Evidence

~~Records as Evidence~~ Records shall in no case be available as
evidence in court proceedings. No officer or employee or member of
the Board shall be allowed to give testimony as to the contents of such
records except as necessary for the review of a decision of the ^{Chairman} Adminis-
~~trator~~ or the Board, or in any proceeding initiated for the enforcement
of an order of the administrator, or in criminal proceedings arising
out of such records or the statements upon which they are based.

Rule 14 - Environmental Protection

14.1. General

of the owner or operator of any well

a. Protection of the environment includes [the lessee's] responsibility to: conduct exploration and development operations in a manner that provides maximum protection of the environment; rehabilitate disturbed lands; take all necessary precautions to protect the public health and safety; and conduct operations in accordance with the spirit and objectives of all applicable ~~Federal~~ environmental legislation, [and supporting executive orders]

b. Adverse environmental impacts from geothermal-related activity shall be prevented or mitigated through enforcement of applicable Federal, State, and local standards, and the application of existing technology. Inability to meet these environmental standards or continued violation of environmental standards ~~due to operations of the lessee~~ ^{due to operations of the owner or operator of the well} after notification, may be construed as grounds for the Supervisor to order a suspension of operations.

owner or operator of a well

c. The ~~lessee~~ shall be responsible for the monitoring of readily identifiable localized environmental impacts associated with specific activities that are under ~~the~~ ^{his} control of the lessee. Monitoring of environmental impacts may be conducted by the use of aerial surveys, inspections, periodic samplings, continuous recordings, or by such other means or methods as required by the Supervisor. Due to the differing natural environmental conditions among geothermal areas, the extent and frequency of such monitoring activities will be ~~determined~~ ^{approved} by the Supervisor on an individual basis. In the event the Supervisor determines that the degree and adequacy of existing environmental protection regulations in certain areas are insufficient, the Supervisor may establish additional and more stringent requirements ~~by the issuance of field orders or by modifying existing orders.~~

[Lessee] ^{The owner or operator of a well} shall provide for acquisition of environmental baseline data ~~as required in accordance with 30 CFR 270.34(h)~~ for a period of one year prior to submission of a plan for production. Techniques and standards to be used by the ~~lessee~~ ^{owner or operator} for meeting these requirements shall ~~receive prior approval by the Supervisor.~~ ^{be subject to the approval of the Supervisor.}

d. ~~z~~ Aesthetics. The lessee shall reduce visual impact, where feasible, by the careful selection of sites for operations and facilities, ~~on leased lands.~~ The design and construction of facilities shall be conducted in a manner such that the facilities will blend into the natural environmental setting of the area by the appropriate use of landscaping, vegetation, compatible color schemes, and minimum profiles. Native plants or other compatible vegetation shall be used, where possible, for landscaping and revegetation.

e. ~~z~~ Land Use and Reclamation. ^{Drilling and} operating plans shall be designed so that ~~operations~~ ^{feasible} will result in the least disturbance of land, water, and vegetation. Existing roads shall be used ~~where suitable.~~ Entry upon certain environmentally fragile land areas ~~as designated by the surface management agency~~ may be either seasonally restricted or restricted to special vehicles or transportation methods which will minimize disturbance to the surface or other resources as specified by the Supervisor and ~~surface management agency.~~ ^{Chairman}

^{Drilling} Operating plans shall provide for the reclamation and revegetation of all disturbed lands in a manner approved by the Supervisor ~~and the appropriate surface management agency.~~ Land

reclamation may include preparation and seeding with prescribed wildlife food and plant cover or improved and acceptable substitutes thereof which will equal or enhance the food values for indigenous wildlife species and domesticated animals. Temporary fencing for such reclaimed areas may be required to facilitate restoration thereof.

g. 5 Slope Stability and Erosion Control. Operations shall be conducted in such a manner so as to minimize erosion and disturbance to natural drainage. The ~~lessee~~ ^{owner or operator of a well} shall provide adequate erosion and drainage control to prevent sediments from disturbed sites from entering water courses for soil and natural resource conservation protection.

g. 4 Biota. ^{owner or operator of a well} The lessee shall conduct all operations in such a manner as to afford reasonable protection of fish, wildlife, and natural habitat. ~~The lessee shall take such measures as are necessary for the conservation of endangered and threatened species of flora and fauna as set forth in by applicable executive orders, regulations, and State or Federal legislation, such as the Endangered Species Act of 1973 and the Fish and Wildlife Coordination Act. When such species would be adversely affected by the lessee's operations on the leased lands,~~ the lessee shall implement those measures necessary to minimize or eliminate such adverse effects and to protect the flora and fauna as specified by the Supervisor in accordance with recommendations by appropriate Federal and State agencies. Such measures may be in addition to provisions set forth in the lease or accompanying stipulations.

h. 4 Cultural Resources Preservation. ^{owner or operator of a well} The lessee shall exercise due diligence in the conduct of his operations to protect and preserve significant archaeological, historical, cultural, paleontological, and unique geologic sites. ~~The lessee shall not disturb any known cemetery or burial ground of any group or culture.~~

^{discovered during any operations}
Previously unknown sites ~~uncovered by the lessee~~ shall be immediately reported to the ~~Supervisor~~ ^{landowner}, and operations on the ~~particular~~ site shall cease until said site can be assessed for its archaeological value, and preservation. ~~Necessary controls and remedial actions for the protection and preservation of cultural resources shall be issued on an individual site basis by the Supervisor as warranted.~~

i. 5 Pollution, Waste Disposal, and Fire Prevention. ^{and local} The lessee shall comply with all applicable Federal, ~~and State,~~ standards with respect to the control of all forms of air, land, water, and noise pollution, ~~including the control of erosion~~ and the disposal of liquid, solid, and gaseous wastes. ~~The Supervisor may, at his discretion, establish additional and more stringent standards. Plans for disposal of well effluents must be approved by the Supervisor before any implementation action is undertaken.~~ Immediate corrective action shall be taken in all cases where pollution has occurred.

Other provisions
Part III - Miscellaneous

Rule 15 - Appeal

As provided in
Chapter 178-10
Section 10 of the
Hawaii Revised Statutes
as defined in these
regulations

~~§178-10 Appeals from decisions of the board. Any person, firm, copartner-
ship, or corporation adversely affected thereby may appeal to the circuit court
from any ruling of the board of land and natural resources regulating the flow,
manner of sealing, or manner of repairing of any well by filing, in writing, a no-
tice of appeal within ten days after the date of the ruling with the clerk of the
court and serving a copy thereof upon the board, stating the grounds therefor.
The court shall have power to review and to affirm, modify, or reverse any
decision or order of the board so appealed from, in any matter of law or fact.
[L-1963, c 39, pt of §1, Supp, §101-10; HRS §178-10, am L-1970, c 123, §1(c)]~~

Rule 16 - PENALTIES

As provided in Chapter
178, ~~Section 10~~ of the Hawaii
Revised Statutes,

~~Chapter 178 §178-7 Violations; penalties. Any person, violating this chapter shall be
fined not more than \$100; and where continuance of waste, as defined in this
chapter, is under immediate control, each day's continuance of the same, after
written notice shall constitute a separate offense; provided, that when the con-
tinuance of the waste is not under immediate control, as where recasing or seal-
ing is necessary, each day's continuance of the same shall constitute a separate
offense after sixty days have elapsed from the time of receiving written notice to
prevent waste. For violations under sections 178-5 and 178-6, each day's con-
tinuance of the same shall constitute a separate offense after 30 days have
elapsed from the time of written notice of violations. [L-1963, c 39, pt of §1;
Supp, §101-7; HRS §178-7, am L-1970, c 123, §1(m)]~~

As provided in Chapter 177 of the
Hawaii Revised Statutes

These regulations

of Chapter 178, H.R.S.

Rule 17 - Injunctions

~~§177-10 Injunctions. If it appears to the board of land and natural
resources that any person has engaged or is about to engage in any act
or practice constituting a violation of this chapter or any rule, regula-
tion, or order of the board, the board may bring an action in the ap-
propriate circuit court to enjoin any such acts or practices and to en-
force compliance with this chapter or any rule, regulation, or order.
Upon a proper showing, the court shall grant a restraining order, tem-
porary or permanent injunction, or other appropriate relief. The board
shall not be required to post a bond. [L-1961, c 122, pt of §1, Supp,
§87B-10]~~

Rule 18 - Amendments

These rules may be amended or repealed at any time by action of the
Board, in accordance with Chapter 91 of the Hawaii Revised Statutes; pro-
vided, however, that any amendment to these rules changing the rental or
royalty due the State of Hawaii or the term of leases shall not adversely
affect leases outstanding upon the effective date of the amendment.

The Board of Land and Natural Resources on _____,
19____, approved and adopted these rules and regulations.

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

Approved this _____ day